104
KF27
.A6H3

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR 1996

Y 4. AP 6/1: IN 8/6/996/PT. 10
Department of the Interior and Rela...

SUPERINTENDENT OF DOCUMENTS
DEPOSITORY
JUL 26 1995
BOSTON PUBLIC LIBRARY
GOVERNMENT DOCUMENTS DEPARTMENT

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS
FIRST SESSION

SUBCOMMITTEE ON THE DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES

RALPH REGULA, Ohio, ***Chairman***

JOSEPH M. McDADE, Pennsylvania	SIDNEY R. YATES, Illinois
JIM KOLBE, Arizona	NORMAN D. DICKS, Washington
JOE SKEEN, New Mexico	TOM BEVILL, Alabama
BARBARA F. VUCANOVICH, Nevada	DAVID E. SKAGGS, Colorado
CHARLES H. TAYLOR. North Carolina	
GEORGE R. NETHERCUTT, JR., Washington	
JIM BUNN, Oregon	

NOTE: Under Committee Rules, Mr. Livingston, as Chairman of the Full Committee, and Mr. Obey, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

DEBORAH WEATHERLY, LORETTA BEAUMONT, MARK MIODUSKI, and JOEL KAPLAN,
Staff Assistants

PART 10

	Page
Secretary of Energy	**1**
Energy Information Administration	**151**
Emergency Preparedness Program	**191**
Economic Regulatory Administration	**221**
Office of Hearings and Appeals	**241**
Fossil Energy Programs	**259**
Energy Conservation	**519**

Printed for the use of the Committee on Appropriations

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR 1996

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON THE DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES

RALPH REGULA, Ohio, *Chairman*

JOSEPH M. McDADE, Pennsylvania	SIDNEY R. YATES, Illinois
JIM KOLBE, Arizona	NORMAN D. DICKS, Washington
JOE SKEEN, New Mexico	TOM BEVILL, Alabama
BARBARA F. VUCANOVICH, Nevada	DAVID E. SKAGGS, Colorado
CHARLES H. TAYLOR. North Carolina	
GEORGE R. NETHERCUTT, Jr., Washington	
JIM BUNN, Oregon	

NOTE: Under Committee Rules, Mr. Livingston, as Chairman of the Full Committee, and Mr. Obey, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

DEBORAH WEATHERLY, LORETTA BEAUMONT, MARK MIODUSKI, and JOEL KAPLAN,
Staff Assistants

PART 10

Page

Secretary of Energy 1

Energy Information Administration 151

Emergency Preparedness Program 191

Economic Regulatory Administration 221

Office of Hearings and Appeals 241

Fossil Energy Programs 259

Energy Conservation 519

Printed for the use of the Committee on Appropriations

U.S. GOVERNMENT PRINTING OFFICE

90–779 O WASHINGTON : 1995

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402
ISBN 0-16-047205-9

COMMITTEE ON APPROPRIATIONS

BOB LIVINGSTON, Louisiana, *Chairman*

JOSEPH M. McDADE, Pennsylvania
JOHN T. MYERS, Indiana
C. W. BILL YOUNG, Florida
RALPH REGULA, Ohio
JERRY LEWIS, California
JOHN EDWARD PORTER, Illinois
HAROLD ROGERS, Kentucky
JOE SKEEN, New Mexico
FRANK R. WOLF, Virginia
TOM DeLAY, Texas
JIM KOLBE, Arizona
BARBARA F. VUCANOVICH, Nevada
JIM LIGHTFOOT, Iowa
RON PACKARD, California
SONNY CALLAHAN, Alabama
JAMES T. WALSH, New York
CHARLES H. TAYLOR, North Carolina
DAVID L. HOBSON, Ohio
ERNEST J. ISTOOK, Jr., Oklahoma
HENRY BONILLA, Texas
JOE KNOLLENBERG, Michigan
DAN MILLER, Florida
JAY DICKEY, Arkansas
JACK KINGSTON, Georgia
FRANK RIGGS, California
RODNEY P. FRELINGHUYSEN, New Jersey
ROGER F. WICKER, Mississippi
MICHAEL P. FORBES, New York
GEORGE R. NETHERCUTT, Jr., Washington
JIM BUNN, Oregon
MARK W. NEUMANN, Wisconsin

DAVID R. OBEY, Wisconsin
SIDNEY R. YATES, Illinois
LOUIS STOKES, Ohio
TOM BEVILL, Alabama
JOHN P. MURTHA, Pennsylvania
CHARLES WILSON, Texas
NORMAN D. DICKS, Washington
MARTIN OLAV SABO, Minnesota
JULIAN C. DIXON, California
VIC FAZIO, California
W. G. (BILL) HEFNER, North Carolina
STENY H. HOYER, Maryland
RICHARD J. DURBIN, Illinois
RONALD D. COLEMAN, Texas
ALAN B. MOLLOHAN, West Virginia
JIM CHAPMAN, Texas
MARCY KAPTUR, Ohio
DAVID E. SKAGGS, Colorado
NANCY PELOSI, California
PETER J. VISCLOSKY, Indiana
THOMAS M. FOGLIETTA, Pennsylvania
ESTEBAN EDWARD TORRES, California
NITA M. LOWEY, New York
RAY THORNTON, Arkansas

JAMES W. DYER, *Clerk and Staff Director*

DEPARTMENT OF THE INTERIOR AND RELATED AGENCIES APPROPRIATIONS FOR 1996

TUESDAY, MARCH 14, 1995.

DEPARTMENT OF ENERGY

WITNESSES

HON. HAZEL R. O'LEARY, SECRETARY, U.S. DEPARTMENT OF ENERGY
JOSEPH F. VIVONA, CHIEF FINANCIAL OFFICER
ELIZABETH E. SMEDLEY, CONTROLLER

OPENING REMARKS

Mr. REGULA [presiding]. Okay, we'll get started on the meeting of our subcommittee today.

We are pleased to have as our guest and here to testify on behalf of the Department of Energy, the Secretary, Hazel O'Leary, just back from China and India, and all kinds of exciting places. I suppose that was rather exciting, and if you did it right, you sold some American products.

As we've said before, we're trying to zero-base the budget in an effort to reduce spending because at this point we don't know what we're going to have for Fiscal Year 1996 by way of allocations, but I'm reasonably certain it won't be more than Fiscal Year 1995, maybe less. I know you're working at trying to gain some efficiencies and effectiveness in the Department, and I believe Senator Dole has had some indication that they might merge you in some other direction. So I think there is a challenge out there.

But we'll make your entire statement a part of the record, and you may summarize for the committee. I guess our members are all committed elsewhere this morning.

Secretary O'LEARY. Thank you, Mr. Chairman. Good morning.

I will, indeed, summarize. I understand the challenge that faces the Department of Energy, as well as our administration, as we jointly work together to continue to bring down the deficit and cut taxes for American taxpayers and families.

To leap right into the fray, I'm well aware that the expectation you had was that this budget for Fiscal Year 1996 would come in below the mark for 1995, and, in point of fact, I have not done that. The way I would express this budget would be almost as one does in a corporate setting, where you're for dramatic cuts and you have to take some one-time cost adjustments to achieve that. So the budget before you is, indeed, $300 million above the budget for Fiscal Year 1995. That budget, I must point out to you, was lower simply because we took advantage of using unexpended funds for offsets; we're not in that position this year, nor will we ever be again if we manage our business correctly.

I'll focus very early on the additional costs and I'd like to talk about them in areas that do not necessarily touch the oversight of this subcommittee, but I believe it's important to articulate them at any rate. The most dramatic savings that we've projected for our Administration, and now to the Congress, over the next five years from our Administration comes from the Department of Energy. I've committed to President Clinton that we will reduce our costs by at least $10 billion, and if we can sell assets, which are controversial, I can bring that figure in at $14 billion.

So what we're doing here is making an investment to begin that trajectory, which we'll see dramatically in Fiscal Year 1997. Two hundred million dollars of those additions to Fiscal Year 1996 from 1995 represent the cost of the environmental management budget to simply buy out contractor employees who must be severed from our rolls. We project that we will lay 12,000 people off of our rolls at contractor sites. The cost to do that in terms of severance pay, meets the average severance pay of government and the marketplace. They are located variously, in South Carolina, Rocky Flats in Colorado, Washington State, and others of our sites, and will cost us approximately $200 million.

Mr. REGULA. Are the 12,000 Government employees or contractor employees?

Secretary O'LEARY. They're contractor employees, Mr. Chairman, and I need to make this point not to refresh you, but to refresh the record. You're well aware of the fact that the Department has approximately 20,200 people. There were 20,500 when we arrived, but the bulk of our employees, the contractor employees, were 160,000; today, we have approximately 136,000. So we've already dramatically reduced that roll, and by the end of this Fiscal Year we will have reduced our contractor rolls by some 12 percent, and we're projecting to go down 27 percent by the end of Fiscal Year 1997.

Mr. YATES. Good morning.

Secretary O'LEARY. Good morning, Mr. Yates.

So these are contractor employees. The reason I'm silent on Department of Energy employees is because we are now going through a realignment of the Department's functions where I expect to be able to report to you by the end of April how we will do in the area of full-time Federal employees, and I expect a dramatic decline in those rolls as well. I need to point out to this committee and for the record that the larger savings from the Department don't come from employee head counts, although we'll do that. They come from efficiencies in management of our facilities and, most importantly, in the way we manage our business relationships with our contractors because that represents the bulk of our expenditures.

Mr. REGULA. Of the 12,000, some of those are on the nuclear side, I assume?

Secretary O'LEARY. They are on the nuclear side, and some of them, quite frankly, are employees who traditionally had weapons production jobs, but are now working in environmental management and with skills, quite frankly, that do not measure up with the work ahead. We have an aggressive program to retrain some of those individuals. So we'll see the anomaly of the Department going down very dramatically, while at the same time, we may be hiring new people with skills required now for the dismantlement and decommissioning of our facilities and to work on the technical efforts at cleanup.

I want to quickly point out that another large area of increase which this committee will have, and does have, oversight and high interest is represented in our energy efficiency budget, which does have a requested increase of 15 percent, recognizing, quite frankly, the successes we've had in that area, both in reducing the energy consumption in the United States as a measure of our gross domestic product and also in increasing jobs and being very effective in that area.

I think it's very important to focus on this initiative at a time when just at the end of this year we dramatically marked increasing energy imports in terms of oil and petroleum products that bring us now to the 50 percent mark. In my mind, now more than ever, does energy efficiency, as well as improving the finding rates of both oil and gas, become important in the United States.

I would close these informal remarks by simply saying to you that the record is replete with real measurable outcomes in terms of monies expended thus far and projections with respect to what we intend to accomplish in this budget. I recognize that the chairman and members of this committee will have strenuous questions about some of the details of cost that are included in this budget and will want to focus on our projections for the capturing of $10 billion and perhaps $14 billion in savings over the next five years, and I believe it's more important for me to now be silent and respond to your pointed questions. I believe it will be a more effective hearing.

So I thank you for this opportunity to appear before you and very much look forward to the questions that I know will be asked.

[The prepared statement of Secretary O'Leary follows:]

Statement of
Hazel R. O'Leary
Secretary of Energy
U.S. Department of Energy
before the
Subcommittee on Interior and Related Agencies
Committee on Appropriations
U.S. House of Representatives

Mr. Chairman and Members of the Subcommittee, I am pleased to appear before you to present the Department of Energy's (DOE) budget for FY 1996. At your January hearing, we discussed the wide range of the Department's critical missions and our actions to deliver more with less. Before reviewing the details of our FY 1996 programs, I would like to bring you up to date on our ongoing streamlining efforts on behalf of the taxpayer.

THE PROGRESS CONTINUES

The Department of Energy is taking the next step in what has been a continuous journey toward improvement. Within my first month at the Department of Energy, I began to apply sound business principles to our operations. We engineered a Strategic Plan which responds to the nation's post Cold-War needs and reformed our major management and operations contracts. Our contracts are being rewritten to emphasize competition and are performance-based. In total, we will recompete $40 billion worth of contracts to garner maximum savings and productivity. We estimate a five year savings of $1.5 billion from contract reform and contractor salary actions. In the last two years we have reduced our contractor work force by 14 percent from more than 144,000. This is an excellent start but we must continue to ask ourselves: "Can we do better?" The answer is yes.

I would like to update you on the progress we have made since January in implementing a comprehensive portfolio of reform and reengineering initiatives so that we may perform better and at less cost to the taxpayer.

Last December, the Department initiated a Strategic Alignment to achieve savings and better performance through a comprehensive analysis of DOE operations and processes. On March 1, the alignment employee-driven analysis team met with the Steering Committee of Assistant Secretaries to report their initial findings and recommendations. These measures are now under further review in the context of the Department's cross-cutting strategic missions. The team's final report will be delivered to me at the end of April, 1995.

We have increased our **five-year savings estimate from $10.6 billion to $14.1 billion** which contributes to the President's goals of deficit reduction and providing a middle income tax cut. The revised total includes $3.7 billion attributed to the proposed sale of the Power Marketing Administrations with the exception of Bonneville. The five year package also includes savings of $4.4 billion from environmental management programs; $1.2 billion from applied research programs; $2.8 billion from strategic alignment efficiencies; and asset sales of $1.6 billion from the sale of the Naval Petroleum Reserves; and $400 million from the sale of surplus highly enriched uranium.

The Galvin Task Force, chaired by Robert Galvin, chairman of the executive committee of Motorola, Inc., issued its recommendations regarding the direction and management of the national laboratories. The task force examined the post-Cold War role of our national laboratories and clearly and forcefully validated the importance of the major research and development missions of the Department and its laboratories. The report also concludes that the laboratory system is oversized for its missions and could be downsized through efficiencies and the elimination of functions and redundancies.

The Department's has developed an implementation roadmap, championed by Under Secretary Charles Curtis, to put into action 24 of the task force's 29 recommendations. Improvements will include: drastically deleting micro-management of the laboratories, a moratorium on DOE reviews at the laboratories is now in place pending the outcome of a process team; eliminating over-burdensome orders and regulations starting with the "26 Most Burdensome," employing "best practices" at the laboratories and better control of overtime, pension costs and decisions to "make or buy".

The Yergin Task Force, chaired by Pulitzer Prize winning author Daniel Yergin, is holding public meetings with the scientific community and industry to develop recommendations to improve the focus of the Department's applied research programs. The Yergin group will issue preliminary findings in April. Their efforts to bring our research priorities more in line with those of industry, will help shape the specifics necessary to accomplish the $1.2 billion five year savings in Applied Research programs called for as part of the five-year reduction package.

We are taking a **close look at our assets and materials**. Some of our many facilities built during the critical efforts to win World War II and the Cold War no longer serve their original function, and we are finding ways they can be of new benefit to the nation. In all, DOE controls 2.4 million acres of land and 100 million square feet of buildings. The Department is opening up more of these resources for economic reuse, energy development, and environmental protection. We are also reviewing our holdings to determine what is surplus which might be used to bring in returns for the taxpayer.

We are **realigning our FY 1997 program plans** and priorities to meet the constraints of our revised outyear budget targets. As a part of this process, we have taken a hard look at the Department's staffing levels and anticipate significant reductions in federal and contractor employees over the next five years necessary to achieve our overall savings goal. At the end of FY 1993, federal and contractor employment totalled 165,000. The Department plans to reduce this 12 percent by the end of FY 1995 for a total of 144,000. We now project further reductions in the outyears, reducing the total number of federal and contractor employees to 130,000 by the end of FY 1998 a reduction of 27 percent from FY 1993.

The Department faces many tough but necessary choices in the coming months. The Department of Energy serves the American people in critical areas which must continue. Our responsibility to the President and his efforts to control the federal deficit, however, demand that we focus on only our most critical of services and do so with increased efficiency and effectiveness.

DISMANTLEMENT IS NOT THE ANSWER

Recently, critics have called for the dismantlement of the Department of Energy arguing that DOE was created "in an emotional reaction to the energy problems of the 1970s." This statement wrongly assumes that the well being of the United States is no longer closely tied to secure energy supplies.

The Department was established more than three years after the end of the 1973 oil embargo. This was not a reflexive reaction but one based on recommendations made by both the Ford and Carter Administrations. Both Presidents independently concluded that the federal government's energy research, development, and policy formation responsibilities were sufficiently important to require the coherence of one organizational structure to address all of these functions.

Today's proposals to dismantle the Department of Energy and transfer its functions to other agencies are similar to those made in the early 1980s. At that time, the Reagan Administration's initial estimates of significant savings were steadily revised downward until the Congressional Budget Office ultimately determined that "the net impact on the budget will be small."

Searching for reductions to offset the Middle-Income Tax Cut, President Clinton took a fresh look at dismantling the Department's functions. After careful consideration, the Administration concluded that taxpayer savings could best be achieved through downsizing and strategic alignment of DOE. In a January 23, Business Week interview, Vice President Gore stated that the Department of Energy has "...succeeded in defining their core missions in a way that demonstrated we're better off with them than without them." We are now well on course to meet this challenge.

Today, as I review the details of the Department's FY 1996 budget, I will put our programs in the context of their importance to the taxpayers. The message is clear -- the Administration and the Congress must carefully consider each appropriation in terms of return on the investment of each tax dollar. As we review the Department's FY 1996 programs, we turn the page on a new chapter of a long collaboration between the Department of Energy and this subcommittee. I look forward to turning to this new chapter with you. Mr. Chairman, the challenges before us in FY 1996 require a renewed sense of collaboration with this subcommittee, if we are to successfully make the transition to a focused, more effective, and more efficient enterprise.

DELIVERING THE DEPARTMENT'S CRITICAL ENERGY MISSION

The Department of Energy programs within the jurisdiction of the Interior and Related Agencies Appropriations Subcommittee serve a vital role for the United States by ensuring sufficient available energy resources for a secure nation, a strong U.S. economy and a cleaner environment for future generations. We take this mission seriously and our commitment is reflected in the Department's FY 1996 budget.

As a nation, we are still vulnerable to oil imports. However, we do have flexibility in responding to shocks in the international oil market as supplies from Mexico, Canada, Venezuela, and Nigeria have become more secure and we continue to encourage supply in those parts of the world. It is also why we continue to encourage exploration in Russia given its vast reserves of oil and gas and why the nation's Strategic Petroleum Reserve, which contains the equivalent of seventy days of U.S. oil demand, remains vital. We continue to push all supply and demand side options into the marketplace in order to not be dependent on any single source, as well as, increase our ability to respond to new market conditions and demands.

In FY 1996 the Department of Energy continues to move away from Cold-War nuclear production activities in preparation for the next generation of global competition. The national security danger for the 21st century is far more than bombs and weapons. It has to do with economic viability and economic dominance. As with the Cold-War, the U.S. cannot afford to lose this battle and the economic security of the United States depends upon full development of domestic energy resources that are secure, reliable and affordable. The Department's FY 1996 Interior Appropriations budget request proposes critical energy investments for a stronger economy, a cleaner future and a more secure nation.

The Clinton Administration recently updated the Department of Commerce 1989 Section 232 Petroleum Finding, stating that "the Department [of Commerce] finds that petroleum imports threaten to impair the national security." The Finding states further that "...on balance, the costs to the national security of an oil import fee outweigh the potential benefits...an oil import fee would likely have an inflationary effect on the economy and would result in loss of significant jobs in the non-petroleum sectors. This, in turn, would reduce real GNP."

Reaffirmed by this finding, the Clinton Administration's energy policy features the development and deployment of energy supplies domestically and internationally, energy conservation and energy efficiency policies that help to limit dependence on foreign oil imports. The programs funded by this subcommittee are the cornerstone of this energy strategy. The technology development programs carried out by the Office of Fossil Energy, and the Office of Energy Efficiency, along with the Strategic Petroleum Reserve, the Emergency Preparedness program, and the Energy Information Administration are the tools with which the nation will secure itself and the U.S. economy from future disruptions in our energy supply.

REALIZING THE BENEFITS -- FY 1994 PROGRAM ACCOMPLISHMENTS

To demonstrate how our programs are meeting the nation's critical energy needs, I would like to cite for you a few success stories from the list of fossil energy and energy efficiency accomplishments for the last fiscal year.

The Department developed the **Domestic Natural Gas and Oil Initiative**. The innovations recommended are expected to contribute to increased domestic availability and use of natural gas by an additional 20 percent of our total gas production today; to preserve and expand production from the Nation's most endangered oil reservoirs could lead to more than 180,000 barrels per day of additional domestic production in 2010, adding cumulative reserves of 1.1 billion barrels, changing the balance of trade equation by $1.9 billion per year, and creating more than 10,000 direct and indirect jobs.

The Department launched the **Advanced Computational Technology Initiative** which teams U.S. companies with DOE's nine national laboratories making it easier and less expensive to find, produce and process natural gas and oil. The first set of 31 government-industry partnerships was selected in February. Industry will cost-share 60 percent of the costs of these partnerships.

The Department developed the **Refinery of the Future** in conjunction with industry to increase the productivity of U.S. refineries and address environmental compliance issues. The National Petroleum Council estimates that environmental regulations will carry a potential cost of $37 billion for the total U.S. refining industry -- $6 billion more than the entire net worth of the refineries themselves.

33 project teams have joined with DOE in joint government-industry oil field demonstration projects. The projects are part of a nationwide program to show producers new ways to use technology to prolong the economic life of some of the nation's most endangered oil fields. Industry is contributing more than $165 million, more than matching the federal government's proposed contribution of $125 million.

The **Clean Coal Technology** program exceeded original cost-sharing expectations, attracting 2 dollars in private and state matching funds for every federal dollar. The federal portion of the program is $2.4 billion with better-than-expected cost sharing totalling more than $4.7 billion. Within the last year, more than a half billion dollars of commercial sales have been made, resulting in approximately 3,400 jobs. Another $9 billion-plus in ongoing or planned projects worldwide are benefitting from data generated by the program.

The Department of Energy has led overseas trade missions to promote U.S. energy projects in India, Pakistan, and China. The total amounts to roughly $19.1 billion worth of energy project agreements in these countries.

A December 15, 1994, Wall St. Journal article said, "Through research-and-development funding, the agency has...helped industry make substantial strides in energy efficiency."

For example, DOE and a small Maryland company, Fusion Lighting Inc., unveiled a revolutionary new type of lighting system last October. Called the Sulfur Lamp, or S-Lamp, the system consists of a unique, golf-ball-size bulb containing sulfur, which emits an intense light when exposed to microwaves. Now, the new system is being demonstrated at the Forrestal Building, where it is lighting the outdoor entrance to the building. Two S-lamp bulbs have replaced 240 mercury bulbs, providing four times the light at one-third the cost. In a new research agreement with the State of Maryland, Westinghouse and Fusion Lighting, the Department is sharing costs to develop the technology for use in businesses and homes.

DOE undertook a retrofit project at our headquarters in the Forrestal building. At no capital cost to the taxpayers, the Department upgraded more that 30,000 lighting fixtures to high efficiency systems in 1994. Before the upgrade, DOE paid more than $600,000 each year. The lighting improvements save the Department nearly $400,000 per year and reduce energy consumption by 63 percent. The emissions savings of this installation is approximately 30 tons of SO_x, 15 tons of NO_x, and more than 4,000 tons of CO_2.

DOE supported technology for energy efficient low-emissivity window coatings successfully penetrated the market, accounting for one-third of residential and one-fifth of commercial buildings window sales in 1993.

The Department added 34 cities to the **Clean Cities** program.

The Department's **Energy Efficiency Center** in the Czech Republic assisted a Texas firm in obtaining $30 million in contracts; U.S. tax revenue from these contracts alone is greater than the original government funding for all nine energy efficiency centers.

We established **1-800-DOE-EREC**, a call-in information service regarding energy efficiency technologies and responded to 45,000 inquiries in 1994.

DOE unveiled the first subcompact car - a Geo Prizm - fueled with economical and environmentally friendly natural gas. The **Advanced Natural Gas Vehicle** features a driving range of 300 miles or more with performance equal to its gasoline counterpart.

OUR FY 1996 BUDGET: AN INVESTMENT WITH HIGH RETURNS

In FY 1996, we are requesting $1.6 billion for programs within the jurisdiction of this subcommittee out of a Department-wide budget request of $17.8 billion. The programs before this subcommittee meet critical national energy resource needs and increase energy efficiency and productivity in all sectors of the U.S. economy. Of all the primary energy used in the United States each year, 37 percent is used by the industrial sector; buildings, both commercial and residential use 36 percent; and 27 percent is used by the transportation sector. The transportation sector continues to rely almost totally on petroleum -- oil accounts for 97 percent of all transportation energy used.

The FY 1996 budget of the Department of Energy fully supports U.S. national security by lessening our vulnerability to disruption of foreign oil imports. In addition, the programs contained in this budget submission meet two other critical national objectives -- increased economic productivity and enhanced environmental quality.

Encouraging Domestic Energy Production

The Department's FY 1996 programs **encourage domestic energy production** by reducing abandonment of domestic oil fields; increasing production from existing U.S. energy resources; and encouraging the use of readily available domestic energy supplies.

Our programs protect the American economy from energy supply disruptions by maintaining the Strategic Petroleum Reserve; maintaining a strong emergency preparedness program; and providing critical supply and demand information through the Energy Information Administration.

The Department's FY 1996 request for programs in the Office of Fossil Energy and Energy Efficiency increase U.S. economic strength and global competitiveness by working to boost production and use of a balanced portfolio of domestic energy resources, providing reliable energy for economic growth, reducing oil imports, and improve the nation's balance of trade equation.

Increasing Economic Productivity

Stimulating overseas markets for U.S. energy technologies, not only benefits our balance of trade but also strengthens our domestic economy by building up U.S. energy industries. There is a tremendous potential benefit in this area. The World Bank anticipates that worldwide investment in electric technologies will total $1 trillion over the next several years. The worldwide coal market is estimated to be over $800 billion through 2010.

We are **working to increase U.S. exports of energy technologies**. The growing world market for environmental technologies is expected to reach $425 billion annually by 1997. For energy efficiency goods and services alone, worldwide market estimates are $84 billion each year. To date, the Department has negotiated trade agreements worth $19.1 billion on behalf of U.S. energy technologies in India, Pakistan and China.

Our programs benefit the economy by increasing the number of jobs in the U.S. in two primary areas. First, we are supporting production from domestic energy industries. The natural gas and oil industry including the associated service industries accounts for nearly 380,000 American jobs across the country. More than 100,000 people work in nearly 4,000 U.S. coal mines. Secondly, the Department is fostering new industries in energy supply and efficiency technologies. More than 50 technologies now in use by U.S. industry were developed with DOE R&D, resulting in over $2.2 billion in documented energy cost savings, and several times more in savings due to related productivity improvements. Energy efficiency programs will produce about 310,000 jobs each year by the year 2000.

The Department's energy programs enable higher profits and increase the availability of capital for American businesses. Capital is made available by lowering commercial energy costs. Energy conservation programs in commercial buildings and industrial efficiency are expected to save American businesses $6.6 billion in energy costs by 2000.

Our programs to increase electric power plant efficiencies benefit the nation not only through more effective use of our natural resources and the prevention of pollutants but by potentially lowering the cost of electricity. If the lower cost, higher performance technologies in our coal-fired advanced power systems program capture the expanding market for new power capacity beginning in the next decade, the annual savings to consumers could amount to as much as $1 billion a year by 2010. This technology would promote continued use of our most abundant domestic energy resource.

Our industrial efficiency programs directly benefit U.S. firms by helping them to increase the productivity of their industrial operations and processes. Since 1976, DOE's industrial efficiency programs have added an estimated $1.2 billion in increased capital productivity of U.S. firms.

We are saving U.S. taxpayers money which can be used more productively. Our programs reduce consumer utility bills. DOE's energy efficiency programs are projected to save taxpayers $10 billion in residential energy costs each year by the year 2000. In addition, through the **Federal Energy Management Program** we are lowering energy costs for federal agencies and installations. In 1993, the federal government spent $9 billion on energy costs, plus an estimated $20 billion spent each year on energy related products.

Enhanced Environmental Quality

The Department of Energy's FY 1996 programs address national environmental quality objectives by reducing the production of energy related emissions. The Department's energy efficiency programs will reduce annual greenhouse gas emissions by about 35 million metric tons of carbon equivalent in the year 2000. Through FY 1993, DOE's industrial efficiency programs have reduced emissions of pollutants that adversely affect local health. Particulate emissions were reduced 7.9 thousand tons/year and sulfur dioxide emissions, 31.2 thousand tons/year.

These programs promote the use of cleaner energy alternatives and technologies. Currently, 54 million Americans live in areas that regularly violate air quality standards. Transportation systems generate 80 percent of the pollution in urban areas. DOE's alternative fuels and transportation technology programs are estimated to prevent the release of 6.3 million metric tons of carbon equivalent by the year 2000 (1.3 percent of transportation carbon emissions) and 50 million metric tons by 2010 (8.6 percent of that year's total transportation carbon emissions).

Another example is DOE's past R&D support for the **atmospheric fluidized-bed combustor** (AFBC) technology which is one of the cleanest and most economical way of using coal to generate electricity and industrial steam. As a result of pioneering federal-private efforts in the 1970s and 80s, every major U.S. boiler manufacturer now offers an AFBC boiler in their product line. More than 300 industrial-scale units have been sold worldwide, and now because of the **Clean Coal Technology** program, the circulating version of the technology is becoming an accepted, utility-scale commercial product.

The Department's programs improve environmental quality by reducing the amount of industrial wastes generated. The chemical, petroleum refining, pulp and paper, primary metals and glass industries account for 95% of all U.S. hazardous manufacturing wastes and 79% of all pollution costs in this country. DOE's pollution prevention programs reduce environmental waste and associated disposal costs. Since 1976, DOE's industrial efficiency programs have prevented the release of 7.3 million tons of carbon dioxide pollution. American industries spend $53 billion a year to meet emissions control regulations.

ENSURING AMERICA'S ENERGY SUPPLY

The FY 1996 Budget Request for the Office of Fossil Energy

The FY 1996 request for the Office of Fossil Energy technology-related programs is $446.4 million, which includes the **Clean Coal Technology** program. The Fossil Energy program assists U.S. firms to develop and apply advanced technologies to produce and use America's abundant supplies of fossil fuels more efficiently and cleanly. In FY 1996, key efforts will include the implementation of the **Domestic Natural Gas and Oil Initiative** and development of high-efficiency, clean power systems. Research and field demonstrations continue to address the constraints of oil recovery in high priority reservoir classes, and we continue to take advantage of opportunities to apply the unmatched technical capabilities of our national laboratories to increase domestic oil and gas producers. The Fossil Energy program also promotes the export of domestic fossil fuel technologies by working with other federal agencies, international organizations and private sector companies.

Oil Technology

Two major changes are occurring in the domestic oil industry: 1) major oil companies are moving to more lucrative prospects overseas, shutting down or downsizing their U.S. research laboratories and leaving aging domestic fields to much smaller, independent producers, and 2) low oil prices and lack of adequate technology are causing an unprecedented number of U.S. oil fields to be abandoned, even though substantial quantities of oil remain unproduced.

The United States still has enormous oil resources. Since the first U.S. oil well was drilled in 1861, we have produced just over 160 billion barrels. Still, by using the best exploration and recovery technology available today and with timely development of advanced technology, U.S. oil producers might be able to recover an amount almost equal to historical production -- perhaps as much as 157 billion barrels. For that to happen, however, today's best technologies must be widely disseminated to industry and advanced technologies must be developed and deployed before domestic fields are prematurely abandoned. Advanced technologies can help to reduce the cost of producing oil thereby reducing the incentive to abandon wells.

The FY 1996 request for **Oil Technology** programs is $86.8 million. This request continues funding for cost-shared field demonstrations of technologies that can prolong the economic life of some of the Nation's most endangered oil fields -- in essence, "buying time" for more advanced technologies to be developed and deployed. Funding is also requested for developing more effective exploration and production technologies, including new seismic approaches for studying the characteristics of a reservoir and advanced recovery techniques such as thermal and chemical processes. Funding is also included to ensure that regulatory authorities have sufficient data to assess risks before imposing new regulatory requirements, hopefully minimizing unnecessary regulatory burdens that could potentially reduce domestic production by as much as 500,000 barrels per day.

Within the oil technology budget, a total of $10 million is requested in FY 1996 to expand DOE's downstream refining and processing research program, with specific attention given to lower-cost environmental compliance technologies and new techniques for upgrading heavier oils.

Natural Gas Technologies

Natural gas is a rapidly resurging domestic energy option. The prevailing opinion of the 1970s that gas was a scarce resource has been replaced with a much better understanding of the tremendous domestic supply that actually exists. The National Petroleum Council has concluded that nearly 1,300 trillion cubic feet of natural gas is technically recoverable in the lower-48 States. Far from being "scarce," this resource base represents a 60-year supply, with the likelihood that even more will be found as technology improves.

The FY 1996 request for **Natural Gas Research and Development** is $145.8 million and has two primary goals: 1) improve natural gas use technologies to make gas an even more attractive fuel, particularly for generating electricity in urban areas with significant environmental concerns; and 2) develop extraction, delivery and environmental compliance technologies to broaden the diversity of the nation's gas supply and increase consumer confidence in the reliability and availability of sufficient gas reserves.

Within the natural gas budget, the Department proposes an investment of $55.5 million for **fuel cell technologies** in FY 1996. This subcommittee's support for fuel cell programs beginning in the 1970s has paid off in the demonstration of first-generation fuel cell electric power and cogeneration systems using phosphoric acid technology. Fuel cell technology holds the most promise as the cleanest energy technology for our future. The FY 1996 budget moves into the advanced stages of development for the next generations of even more efficient fuel cell technology -- the molten carbonate and solid oxide fuel cells. Both concepts are making excellent progress toward commercial introduction in the 1998-2000 timeframe. Included in our FY 1996 request is also $8 million for a fuel cell climate change action program that accelerate demonstrations of advanced fuel cell systems.

The FY 1996 request for **advanced gas turbine systems** is $44 million. This funding will move competitively-selected U.S. turbine manufacturers beyond the halfway point in an 8-year program to develop a highly-advanced, 21st-century "leapfrog" turbine system. In the next 20 years, more than half of all new power generating capacity added in the U.S. will be gas-turbine based, and this trend will also be common to much of the world's electric power market. U.S. turbine manufacturers lead the world today, but overseas vendors are rapidly closing the technology gap. If our turbine development program is successful, by the year 2000, the U.S. will have available a high-efficiency, ultra-clean turbine system that will be superior in performance and lower in cost than any turbine technology offered by our competitors. Our program involves utility-scale development sponsored by the Office of Fossil Energy and industrial-scale development sponsored by the Office of Energy Efficiency. Together, both programs have more than 100 participating members from universities, industry, energy-user groups and state and local agencies.

The FY 1996 request for **natural gas supply research and development** is $46.4 million. This effort responds to projections by the Gas Research Institute that advanced technology will be necessary to produce sufficient natural gas to meet expected demand by 2010. In fact, as much as 12 trillion cubic feet of the 28 trillion cubic feet the Gas Research Institute projects for U.S. consumption in 2010 is likely to require technological improvement. Our funding proposal requests $33 million for the development of new drilling tools and production techniques for natural gas that has been bypassed in existing fields and for the extensive gas resources that exist in the more densely-packed, harder-to-produce formations. Also included in this funding is the continued development of gas data systems, atlases and models that will give producers a better "engineering picture" of the Nation's gas resource.

Included in the FY 1996 request for natural gas supply R&D is $14 million, to be combined with $4 million from the oil technology program, to support additional **Advanced Computational Technology Initiative** projects, which are applying the supercomputing technologies of the National Laboratories to boost domestic oil and gas production.

We are also requesting $3.1 million to develop better natural gas delivery and storage technologies and more uniform reporting procedures, again to help increase customer confidence that natural gas can be supplied when needed. Another $5.4 million is being requested to study lower cost, more effective ways to dispose of wastes produced during natural gas drilling and processing operations, and $4.9 million is being proposed to develop more economical means for converting remote gas supplies into more useable liquid fuels and to upgrade natural gas that is below pipeline quality.

Within the Office of Energy Efficiency, there is a total request of $107.1 million in technologies which promote the use of natural gas.

Coal Research and Development

The United States relies on coal for more than 22 percent of its total energy consumption and nearly 55 percent of its electric power production. Economic growth will increase production of U.S. coal by more than 21 percent by the year 2010, with the predominant use in this country as well as overseas being the generation of electricity.

The highest priority in the FY 1996 Coal Research and Development budget is the cost-shared development with industry of 21st century electric power generating technologies -- advanced processes that can comply with new Clean Air Act Amendment standards while at the same time, lower the cost of electricity.

The FY 1996 request for **Coal Research and Development** is $114.9 million. Approximately $73.4 million of this will support the development of **advanced, clean, efficient power systems** such as advanced low-emission pulverized coal systems, high efficiency pressurized fluidized bed technology, high efficiency integrated gasification combined cycle technology, and indirectly fired cycles. These technologies have the potential to reduce regulated emissions from coal power plants by as much as 10-fold compared to current clean air standards, while lowering the cost of electricity 10 to 20 percent.

The FY 1996 budget also proposes $16.6 million for **advanced clean fuels research.** This reduces the scope of the federal program to develop lower-cost ways to produce liquid fuels from coal. We propose to maintain a viable technology base for the nation's possible future use of these coal conversion technologies, but have reduced larger-scale engineering development due to projections for continued low crude oil prices. Also within the request for Coal Research and Development is $24.9 million for **advanced research and technology development**, the program that provides the advanced concepts, more fundamental research, and crosscutting analyses that undergird our technology development efforts.

Clean Coal Technology

Given the tight federal budget requirements, the FY 1996 budget requests only enough additional funding to meet Clean Coal Technology contractual commitments for that year. These requirements are estimated to be $10 million. By the end of FY 1996, 24 projects, primarily those selected in the initial rounds of competition, will have completed their co-funded operations. Most of the more complex power generating technologies -- particularly important for the 21st century -- will be entering their construction or operation phase.

We anticipate that funding from this program will be available as a budget offset in the future. The program establishes specific decision points for all projects and defines critical performance requirements that must be met by the industrial co-sponsor. Over the coming months, several projects will reach these decision points. We, along with our private sector partners, will critically examine the merits of each project and whether the original purpose and financial commitment continues to exist. If any project is cancelled, the project's funding will either be used to meet the needs of remaining projects, or will be rescinded if the funds are not needed by the program.

The Strategic Petroleum Reserve

The Strategic Petroleum Reserve (SPR) is our national insurance policy. The potential still remains for world energy market supply disruptions from wars, unrest, natural disasters and failures in transportation logistics. Reliance on Persian Gulf oil and reliance on a stable world economy fed by that oil continue and with these, the need to maintain the nation's oil emergency stockpile. Currently, the SPR holds 592 million barrels of oil and has a sustainable drawdown rate of 3.1 million barrels per day, in the event of a significant U.S. oil market disruption. This drawdown rate is 20 percent lower than the average of 3.9 million barrels per day, due to problems with excess gas content in part of the reserves. To put this number in context, the SPR can still release oil for up to three months at a rate equivalent to more than 40 percent of our daily crude oil imports. SPR is a national asset; however, it is one that is aging and particularly for the next 4-5 years, it will require a concentrated effort to refurbish its infrastructure and ensure its readiness for at least the next quarter century.

The FY 1996 budget anticipates a level of effort of approximately $312.7 million. Given the tight limitations on new funding, however, we are requesting only $25.7 million in new budget authority. To fund the remaining FY 1996 requirements, we are proposing to transfer $187 million from the Reserve's petroleum account. This will be the final portion of funding available from that account for offsetting our operations budget; the remaining funds in the account will be necessary to pay annual fees for terminalling. We are also proposing a one-time sale of up to 7 million barrels of crude oil to generate approximately $100 million that would offset the costs of moving oil from the Weeks Island site and decommissioning it, and permit us to maintain the pace of our life extension program to secure the U.S. investment in this significant asset. The sale would amount to less than one day's worth of oil imports, and resulting oil deliveries would extend over a 90- to 180-day period, assuring that there would be no impact on Gulf Coast crude prices.

The Naval Petroleum and Oil Shale Reserves

The Naval Petroleum Reserves were established in the early 1900s to ensure a secure source of crude oil for the Navy. The Reserves no longer serve that purpose. Instead, they are operated today strictly as commercial ventures. The government can no longer operate the Reserves in accordance with prudent commercial standards because of restrictions on federal operations. In addition, the three-year federal appropriations cycle precludes the timely implementation of investment decisions necessary to maximize the value of the fields.

For these reasons, in FY 1996, the Department will request Congressional authorization for a two-step process for the privatization of the Reserves. The first step would establish a for-profit, federally owned government corporation to manage the Reserves. We will submit legislation that further defines the proposed operation of the corporation. The second step of the proposal involves the sale of the government's interest in the Reserves in FY 1997. In FY 1996, the corporation would obtain a professional valuation of the Reserves and conduct the necessary studies to ensure that the taxpayer receives the highest practicable return on the sale of the Reserves.

INVESTMENTS IN OUR FUTURE

FY 1996 Energy Efficiency Budget Request

The FY 1996 budget request of $890.6 million for programs of the Office of Energy Efficiency will generate significant benefits for taxpayers. For example, the programs in our FY 1996 request, will save American families $10 billion each year in home utility bills by the year 2000. U.S. businesses will save $6.6 billion in their energy costs each year by the year 2000, freeing up money for more productive uses. Add to this the estimated $3 billion which our programs are estimated to save in the area of industrial waste disposal costs through pollution prevention efficiencies. Finally, this budget request will enable the taxpayer to save $400 million in avoided federal energy costs annually by 2000.

This request also offers significant environmental benefits. Our FY 1996 programs are expected to reduce the emission of greenhouse gases and pollutants which adversely affect local health, for carbon, the equivalent of 35 million metric tons by the year 2000. This will be achieved through a targeted portfolio of pollution prevention technology research and development in all sectors; and aggressive market deployment of energy efficient technologies.

The Office of Energy Efficiency focuses programs on the highest energy consumption sectors of the U.S. economy. Through a carefully targeted portfolio of research and development support, technical assistance, demonstration projects, market acceleration and voluntary partnerships; the program is working hard to meet the Administration's energy conservation and pollution prevention goals without having to impose taxes or unpopular mandatory requirements.

Transportation Technologies

The transportation sector consumes over 27 percent of U.S. energy supplies, relying almost solely, 97 percent, on petroleum products. Fully 70 percent of all U.S. oil use is in the transportation sector. Though automobile fuel efficiency has improved, transportation energy consumption is up 14 percent since 1980. A key reason: Americans are driving 43 percent more miles. Each day Americans use 4 million more barrels of oil for transportation than we produce. This gap is projected to rise to 9 million barrels by 2010.

In FY 1996, the Department requests $258.5 million for the programs of the Office of Transportation Technologies. Within this total, $161 million is proposed for the **Electric Vehicle, Hybrid Vehicle** and **Fuel Cell Vehicle** programs, has been identified as a part of the Administration's **Partnership for a New Generation Vehicle (PNGV).** Seven federal agencies, the big three automakers and their supplier base have joined together to dramatically change the American automobile. Within the next ten years, the partnership's major goal is to produce a commercial prototype, mid-size car featuring three times the fuel economy of similar cars on the road today, with no sacrifice in safety, cost or performance. This new car will get at least 80 miles to a gallon of gasoline and will emit 80 percent fewer greenhouse gases. By year 2010, it is estimated that the PNGV program will create benefits including energy cost savings exceeding $6.4 billion, and a net increase of 325,000 jobs. Also, by 2010, the PNGV program will result in emission reductions that include the following: 80 million tons of CO_2, over 30 thousand tons of SOx, and over 35 thousand tons of NOx. Carbon emission reductions will exceed 110 thousand tons.

The Department relies on local initiative to stimulate market acceptance of Alternative Fueled Vehicles (AFV) through its **Clean Cities** program for which $3 million is requested in FY 1996. DOE works with local areas to build their own partnerships and elicit agreements from local suppliers. One approach is to pool commitments from local fleet owners to purchase AFVs. That, in turn, spurs increased investments from vehicle producers in AFV production and fuel providers in needed fuel infrastructure. At the federal level, the Department works with other federal agencies to coordinate local investment initiatives with scheduled purchases of federal fleet AFVs. As of December 1994, DOE had recognized 34 Clean Cities, featuring 30,000 operational AFVs and 1,200 community and private organizations nation-wide. In FY 1995, we plan to add 16 new cities while following through on our commitments to assist and support all the cities currently in the program. By the year 2000, the 300,000 alternative fuel vehicles in the Clean Cities fleet program are projected to displace six million barrels of oil, reduce over 1,200 tons of hydrocarbons, 1,500 tons of nitrous oxides, and over 4,600 tons of carbon monoxide.

DOE's transportation program also works to promote the use of alternative fuels. The **Alternative Fuel Vehicle (AFV) Deployment** program ($32.2 million in FY 1996) and **AFV Development and Demonstration** program ($20.2 million in FY 1996) have helped to bring about a 300 percent increase in alternative fuel refueling facilities nationwide, and increase the number of alternative fuel vehicle models available to consumers from U.S. automakers. In FY 1996, the program will continue to work with States, local governments and private fleet operators to assist in the deployment of alternative fuel vehicles, largely through voluntary programs.

Industrial Technologies

American industries consume 37 percent of the energy used in the U.S. at a cost of nearly $100 billion each year. In addition, industries spend $53 billion per year to meet pollution control regulations. Energy efficiency technologies can prevent pollution before it occurs, freeing industrial capital for more productive uses than utility and waste disposal bills. These technologies enjoy a promising world market. The world-wide environmental technologies market is expected to reach $425 billion annually by 1997.

In FY 1996, the request for Industrial Technologies programs is $170.3 million. Within this amount, $69.5 million directly relates to the **Industries of the Future** program. DOE is working with seven key process industries to identify critical near, mid, and long-term R&D needs that could greatly improve industrial productivity and lower energy use. These seven industries -- petroleum, chemicals, glass, forest and paper products, aluminum, steel, and foundries-- employ nearly 2 million people directly and provide basic materials and fuels essential to the entire U.S. basic manufacturing sector which employs over 18 million workers. These industries also account for 88 percent of the energy used in U.S. manufacturing and generate over 90 percent of the industrial waste. In the pulp and paper industry, participants crafted a technology roadmap which are estimated to improve paper industry energy use by 20 trillion btus by 2020 and reduce other operation costs by over $2 billion by the same year. Examples of other industrial partners include: Aluminum Company of America (ALCOA), Glass Packaging Institute, and American Iron and Steel Institute.

In FY 1996, $8.9 million is requested for DOE's **Motor Challenge** program, which helps industries learn about and adopt energy efficient motor systems. About 40 million electric motors are used in U.S. manufacturing operations, consuming 70 percent of all the electricity used by industry. It is estimated that 50 percent of this energy can be saved with more efficient motor systems. In the few months since the program began, close to 100 of the nation's leading businesses have joined including Solar Turbines, Dow Chemical, Siemens, and Boeing. In FY 1996, the program will enroll 600 partners and by the year 2000 the goal is to involve 1,000 private sector partners, reducing pollution by 1.2 million metric tons of carbon equivalent and saving 12 billion kilowatt hours of electricity annually.

Last year, this subcommittee appropriated funds to move forward with voluntary energy partnerships to reduce emissions rather than rely on command and control policies of the past. One of these programs is **Climate Wise**. The Climate Wise program was created to garner agreements from industry partners to voluntarily reduce greenhouse gas emissions significantly by the year 2000. Corporations such as AT&T, DuPont and Johnson and Johnson are among those participating. To date, eight large companies have signed Climate Wise pledges. Collectively, the companies represent three percent of the U.S. industrial energy usage and have pledged to reduce five million metric tons of carbon equivalent.

Building Technologies

Commercial and residential buildings currently use 36 percent of America's energy and building energy use is growing at the rate of 3.3 percent each year. However, the potential for savings is high. A 30 percent improvement in U.S. building efficiency, which is achievable, would reduce consumer costs by $38 billion in 15 years. DOE's Office of Building Technologies operates a strategic array of programs, including research and development of advanced technologies and construction practices; collaborative programs with industry and consumers to deploy high-efficiency technologies into the commercial and residential markets; and national standards for appliances and buildings to ensure that they meet minimum energy efficiency levels.

A total of $152.5 million is requested for Building Technologies programs in FY 1996. Within this total, $19.8 million is proposed to support the **Rebuild America** initiative begun last year. This program works to deploy new technologies in existing commercial sector buildings by creating partnerships among community and regional organizations, private businesses, utilities, and technical experts, to renovate commercial and multifamily residential buildings. The program will reduce operating costs for building owners and tenants by an estimated $650 million each year over the next five years.

DOE is working with organizations such as Habitat for Humanity and the U.S. Department of Housing and Urban Development (HUD), which have large known new housing construction and renovation needs, to aggressively deploy energy efficiency technologies. DOE requests $5 million for the **Affordable Housing for Low-Income Families** initiative in FY 1996. Currently there are 4 million housing units assisted by HUD, carrying an annual utility cost of $2 billion. This small investment in energy efficiency training and technical assistance for local housing authorities, HUD field staff, and State and local governments, is designed to leverage a 4 to 1 investment of capital through energy service companies, utilities, and State and local governments. The anticipated benefits are reduced federal utility cost savings of over $300 million annually with a cumulative energy savings of .14 quads by the year 2000.

Supporting these deployment programs is the core portfolio of research and development program which total $40.6 million in FY 1996. These programs have demonstrated sustained success in introducing new technologies, such as electronic ballasts for lighting that represents 25 percent of the market currently. In FY 1996, we will work closely with industry to develop and introduce advanced technologies and building components that can reduce energy use by 30 percent to 60 percent, such as natural gas absorption heat pumps, electrochromic windows, the sulfur lamp, and fuel cell applications for buildings. In addition to individual technologies, programs such as **Building America**, for which $5.9 million is requested, work through industry consortia to develop new construction methods which lower energy use and construction waste by 50 percent, thus lowering the cost to build. In addition, $11.8 million is requested for the **Building Standards and Guidelines** program which will help families to realize an estimated $1.2 billion in energy savings each year by the year 2000. DOE requests $10.4 million for **Lighting and Appliance Standards** program which is estimated to generate $400 in energy savings for every federal dollar invested.

Federal Energy Management Program

In 1993, the federal government spent nearly $9 billion on energy costs to support its buildings, fleets and operations around the country. Add to this an estimated $20 billion which federal agencies spend each year to purchase energy related products. In the past, federal agencies lacked the incentive and capital for energy savings improvements. Today, energy-service companies, local utilities and DOE's **Federal Energy Management Program** are working together to make money available for federal energy efficiency projects.

In 1993, President Clinton issued Executive Order 12902, requiring the federal government to become more energy efficient. He directed agencies to reduce energy consumption 30 percent from their 1985 consumption levels by 2005. To carry out this Order, DOE's FEMP program creates partnerships between government agencies and private companies. The costs of its energy efficiency projects are increasingly offset with utility rebates and financed by private energy service companies (ESCOs). ESCOs use "energy saving performance contracts" to obtain the up-front costs of efficiency improvements from private, non-federal sources, replaying these costs with a share of the energy savings.

The FY 1996 request for FEMP is $25.4 million. FEMP's efforts have already helped to reduce federal energy costs by more than a half billion dollars over the last two years. With this new way of doing business that includes partnerships and problem solving, the results can be significantly increased. By the year 2000, the program estimates that they will achieve a 20 percent reduction in the energy use of federal agencies; save taxpayers $400 million each year; create 10,000 new jobs; leverage more than $1 billion in private sector investments; and prevent the release of 30 million metric tons of carbon equivalent and other pollutants. The President's goal for the year 2000 is a reduction of 100 million metric tons to achieve stabilization of greenhouse gas emissions.

Technical and Financial Assistance

The Department requests a total of $321.2 million in FY 1996 for the Office of Technical and Financial Assistance. Of this total, $276.5 million is requested for grants and $44.7 million for informational, technical assistance and financial incentive programs. This office administers DOE's State grants programs including the **State Energy Conservation Program** (SECP), the **Weatherization Assistance Program** (WAP), the **Institutional Conservation Program** (ICP), and the **Municipal Energy Management Program** (MEMP).

In FY 1996, the request for WAP grants is $229 million. Nearly 28 million American households are considered to have annual incomes below $8,000 making them eligible for DOE's **Weatherization Assistance Program.** State and local agencies receiving federal WAP grants leverage over $200 million in additional funding to weatherize 230,000 homes each year with funds from all sources. The program has a favorable benefit-cost ratio of 1.6 and will reduce energy us by 2,044 trillion BTU and will directly employ over 11,000 full time people and support an additional 5,000 jobs each year throughout the country. The FY 1996 requested funding level will allow the Department to proceed with a new grant distribution formula which addresses the needs of warm weather states while holding all grantees harmless from significant reductions, as directed by this subcommittee.

The Department is requesting $24.6 million in FY 1996 for the **State Energy Conservation Program** grants. Currently 57 states, territories and the District of Columbia offer state energy services. Since 1983, over 8,000 specific state projects have been implemented usually leveraging 19 dollars in additional funding for every one dollar appropriated through the SECP program, and supporting 10,000 jobs each year. The FY 1996 request for this program will allow the States to achieve a 10 percent improvement in energy efficiency by the year 2000.

Utility Technologies

The production and consumption of energy by utilities has a significant impact on the environment. Carbon dioxide emission attributed to the primary energy use of utilities constitute 45 percent of the U.S. total.

In the Office of Utility Technologies, the FY 1996 request for **Integrated Resource Planning** (IRP) is $9.8 million. Currently, the program provides ongoing technical and information assistance to 37 States which utilize some form of gas and/or electric IRP processes. IRP is a process for making efficient utility resource choices, considering all available supply and demand options. With competition increasing in the utility industry, the IRP Program will play a key role in ensuring a smooth transition, by helping states and utilities develop market-compatible resource planning tools and processes. The effective use of demand-side management technologies through the IRP process can reduce carbon emissions by 350 million metric tons through deferral of new power plants. Avoiding or deferring new power generation through efficiency also will save billions of dollars for consumers over the next decade. The FY 1996 IRP Program will direct increasing resources and attention to delivering technical assistance directly to states and utilities facing the challenges of resource planning in a competitive environment.

ADDITIONAL PROGRAMS

Emergency Preparedness

The Emergency Preparedness program leads the Department's efforts to develop and direct energy emergency preparedness planning, operational, and response programs to reduce U.S. vulnerability to oil supply disruptions. The $8.3 million program is organized under both the Department's Office of Intelligence and National Security ($4.7 million) and the Office of Policy, Planning and Program Evaluation ($3.6 million). The FY 1996 program performance measurements include: provide assessment within 2 hours after identification of potential emergency; and implement corrective actions within 60 days after completion of the energy emergency simulation exercises.

Energy Information Administration

> *"...the agency's information on oil and gas supplies, prices and trends has steadily improved over the years, and is far more reliable than anything offered by the industries themselves."* -- Wall St. Journal, 12/15/94

The Department assists economic productivity in the energy industries through the data made available by the Energy Information Administration (EIA). This program also enables decision makers to carefully monitor U.S. energy supply and demand for national security and economic policy matters.

In FY 1996 the Department requests $84.7 million to continue the operation of the Energy Information Administration (EIA). EIA provides invaluable information on energy production, use, and market projections. Statistics are collected in various energy resource areas, such as oil and gas, coal, nuclear, electric and alternative fuels. Energy markets are analyzed and the National Energy Modeling System generates mid-term forecasts to integrate energy supply and demand. This information is critical, providing the Department with essential benchmarks to keep the work toward the Department's core missions on track.

THE NEXT CHAPTER

Mr. Chairman, my experience with the private sector has taught me that moving too hastily without adequate planning leads to downsizing efforts that are not successful. At the Department of Energy, we are doing all we can to bring down the costs of our work on behalf of the taxpayer. We must do so prudently, however, and this will take both time and additional expenditures. A wisely managed transition to a smaller, more effective Department will require careful planning and some new costs in the short run. This is one reason that our FY 1996 budget shows a relatively small proportion of the planned $14.1 billion savings.

It will, for example, take time to receive appropriate Congressional approvals and divest assets as significant as the Power Marketing Administrations and the Naval Petroleum Reserves. We want to be sure that the taxpayers' investment in these national assets show a valuable return.

As I have explained to you, our Strategic Alignment Initiative is moving forward rapidly and will conclude in April with the steps we will take to reengineer the Department of Energy. Real savings gained in FY 1996 from these recommendations will be brought to your attention as soon as they are recognized.

Our collaboration together over the next few months will have historical consequences. We are restructuring the way the Department of Energy conducts its business. A year from now, I will present to you a Department of Energy that is fundamentally different from the organization we have been talking about today. Our goal is to bring laser-like precision to better focus the missions the federal government must carry out, and to perform these missions far more effectively and at a greatly reduced cost to the taxpayers.

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

JOSEPH F. VIVONA

Joseph F. Vivona was nominated by President Clinton on May 19, 1994, to serve as the Chief Financial Officer (CFO) for the U.S. Department of Energy (DOE). He was confirmed by the United States Senate on July 21, 1994.

As the Department's first confirmed CFO, he will be responsible for the Department's budget and accounting operations as well as for development of financial policy and for establishment of a compliance review program which ensures that proper financial procedures are followed by Headquarters and field offices.

Prior to joining DOE, Mr. Vivona was the Deputy State Budget Director and Deputy State Comptroller for the Office of Management and Budget, State of New Jersey for four years. In this position, he was responsible for both the budgetary and comptroller functions for the State of New Jersey. He served as Vice Chancellor (1985 - 1990) and Deputy Vice Chancellor (1983-1985) at the City University of New York and was responsible for the financial administration of the University as well as administrative and academic computing. From 1977 to 1983, he held several positions within the New Jersey Department of Human Services including the position of Assistant Commissioner for Management and Budget.

Mr. Vivona received his Bachelor of Arts degree at St. John's University in 1972, and Masters of Arts degree from the Graduate School of Arts and Science, New York University in 1974.

Born in Brooklyn, New York on March 18, 1951, Mr. Vivona currently resides in Chevy Chase, Maryland. He is married to Barbara Baird Vivona of Hicksville, Long Island. They have two sons, Chris and Jon.

August 1994

SALE OF ASSETS

Mr. REGULA. Thank you.

You mentioned a $4 billion addition in your reductions if you had an assets sale. What assets are you talking about that are represented by that $4 billion?

Secretary O'LEARY. I will begin with some that I know will strike very deeply in the hearts of some members of this committee. So let me just start——

Mr. SKEEN. Don't look this way. [Laughter.]

Secretary O'LEARY. Don't mention it——

Mr. REGULA. There aren't any of them in my district. So go ahead. [Laughter.]

Mr. YATES. There are none in mine, either, but I'm above that. [Laughter.]

Mr. SKEEN. I'm suspicious of both of you. [Laughter.]

SALE OF HIGHLY ENRICHED URANIUM

Secretary O'LEARY. Let me start with what I hope will be the most noncontroversial area, and that is the sale of excess highly enriched uranium, which brings in value to the taxpayer of ultimately $400 million. You may note that the President just recently declared some of our stockpile excess, and we really hope to use that sale to offset some of the budget requests that we're making.

In the areas that are much more controversial——

Mr. REGULA. Didn't we buy some from Russia——

Secretary O'LEARY. We did, indeed——

Mr. REGULA [continuing]. To help them reduce what they had?

Secretary O'LEARY. We did, indeed, but we are now—and we did that for two reasons. One, we were very interested in acquiring that highly-enriched uranium because we believe that the ability of the Russians, especially with some of this highly enriched uranium in the former Soviet States, was not and could not be placed under secure circumstance for either control, management, or accounting. So we thought it was very important——

Mr. REGULA. It was a security issue then?

Secretary O'LEARY. We thought it was very important to get that in our hands because of nonproliferation.

Mr. REGULA. Right.

Secretary O'LEARY. The President's announcement now results from a finding by the Nuclear Weapons Council that, as we continue to dismantle our strategic weapons stockpile, we no longer have a requirement to maintain this stockpile of highly-enriched uranium, and so it has been declared surplus. That puts us in the position of being able to sell it to the U.S. Enrichment Corporation, which now puts the Corporation in the business of having this product for down-blending and use for commercial purposes.

In other areas it might tend to be a bit more controversial. I would agree, I really don't know which one to mention first. So I'll just get right into the fray.

SALE OF POWER MARKETING ADMINISTRATIONS

The first is the proposed sale of some of our Power Marketing Administrations, save Bonneville. Bonneville is excluded from those proposals. You will recall that during last Fiscal Year we proposed the sale of assets of the Alaskan Power Administration and we have added now three other power administrations with a clear directive from the President that we should very carefully undertake these sales, so as not to cause rate shock to the ratepayers who use the wholesale power coming from these power administrations. We step this off in a very logical process that has first in the queue the Alaskan Power Administration and follows quite normally next with the Southeast and then Western Power Administration.

We will be working out the details of those sales during this Fiscal Year, and our desire is to work very closely with the Congress because I'm clearly understanding that our major challenge is to sell these assets, and to somehow control rate shock. At the same time we have to offer an asset to buyers who will certainly want to make some sort of profit to make it worthwhile. And I recognize that there is likely to be deep probing in this area.

NAVAL PETROLEUM RESERVES

The other area that we have proposed for sale involves the Naval Petroleum Reserves, and our thought here has been, was last year, and is again this year—and, quite frankly, with a bit more vigor—that this is a business that the Government no longer belongs in. We acquired this property in the early part of the 20th century when it was unclear to us whether the private sector could provide the petroleum needed to power our Navy. We are clear now that the private sector knows how to do that, and, most importantly, our observations have been that under strictures of Government rules and regulations, we have not been able to operate these reserves like a business. We have not been able to reinvest to insure that we're getting the most value from our reserves, and we believe it's time to get out of this business. I very much look forward to the questions that I know will shortly come on both these issues.

Mr. REGULA. Thank you. We're limiting our first round to five minutes. So we'll move on.

Mr. Yates?

Mr. YATES. Well, first, let me say that I had not anticipated being here. There is a meeting of the Holocaust Council Committee this morning which has an important mission, but I've been able to postpone that to later. So I'm very pleased to have the opportunity of meeting again with Secretary O'Leary——

Secretary O'LEARY. Thank you.

Mr. YATES [continuing]. At a time who knows whether we'll meet again——

[Laughter.]

Secretary O'LEARY. Under some circumstance, Mr. Yates, I'm sure we will.

Mr. YATES. Is it a provision of the Contract to eliminate the Department of Energy? At any rate, I do want to commend you upon the sterling job you've performed as head of the Department of Energy. I think its operations have been very good.

I don't happen to agree with you on the sale of the Naval Reserves. I was just reading a book on the Teapot Dome scandal, which was written, oh, maybe in the sixties, about an event that occurred in the twenties, when the Secretary of the Interior, Albert Fall, a resident of the "land of enchantment"——

Mr. SKEEN. Thank you, Mr. Yates.

Mr. YATES [continuing]. In New Mexico——

[Laughter.]

Mr. SKEEN. Mr. Doheny was also——

Mr. YATES. Yes, there were a number of them. Doheny was there and Dohorty was there, and a few others, but Mr. Fall was the Secretary of the Interior, subsequently, a Senator—or previously a Senator.

Mr. SKEEN. Previously.

Mr. YATES. And he went to jail as a result of that—[laughter]—not as a result of having been a Senator, but as a result of——

Mr. SKEEN. Is that a prerequisite? [Laughter.]

Mr. YATES. I have no comment on that. [Laughter.]

This was as a result of having given, really as a gift, the oil belonging to the people of the United States. And we've held it since that time. Efforts have been made in recent years to sell it. I don't know whether the Reagan administration was the first.

Secretary O'LEARY. Yes, sir.

Mr. YATES. It was the first? And the Bush administration favored the sale, and then the Clinton administration now comes along in favor—did you shake your head no or yes?

Secretary O'LEARY. No, I said here we are, sir, yes. [Laughter.]

Mr. YATES. Oh, yes.

Secretary O'LEARY. Here we are.

Mr. YATES. In each of the previous instances, I have the impression, if my memory is correct, that the sale price was something like a billion dollars. If that's true, it would have been another giveaway because the reserves had an appraisal value only a few years ago of something like $12 billion. If memory serves, the reserves make a net profit for the people of the United States, the Treasury, of—what is it—$100 to $200 million a year or more?

Secretary O'LEARY. Yes, 160——

Mr. YATES. One sixty?

Secretary O'LEARY. Yes.

Mr. YATES. A hundred and sixty million dollars a year. Well, that's not peanuts. That's pretty good money going into the Treasury of the United States when there's so much money coming out of the Treasury. At least this is what my Republican friends would call an "offset" to some degree.

At any rate, I don't know how you propose to sell it. I had heard that there was a proposed sales price in the neighborhood of a billion six, and if that's true, you're giving a gift; you're giving the reserves away again. Now I don't know whether that's true or not, but I would urge you not to make a gift out of it.

We have a comparable matter coming up today in the Rules Committee, where I have to testify in relatively a few minutes.

There is an amendment which gives, in its own way, the timber of the United States to the timber industry for exploitation, and I'm opposing that as well.

But let's get back to oil. How do you propose to sell these reserves? Have you established—I shouldn't say "a giveaway price," but have you established a sales price for all the reserves?

Secretary O'LEARY. We have not established a clear sales price, and I absolutely agree with you, Mr. Yates, that we certainly cannot and should not give this property away. I think where we've led ourselves into this confusion is that, working with the Office of Management and Budget, we've attempted to strike a value on the property based on the revenue streams coming from a field that has not been well operated. What we're proposing to do here is to move in two steps. The first piece we'd like is the corporatization of these fields. And by that, I mean lifting the strictures of budget control and the inability of the Department to reinvest in the fields, so that we may further refine our ability to exploit and withdraw from the fields, so that we raise the revenue streams. That would be the first step.

Once we've acquired the ability to manage these sites like a business and improve the flow from the wells, we also improve the ability to increase the revenue streams. I think it is that point where we would also be asking—I know it is—that we'd also be asking for the capability to cause the kind of feasibility study to be done that one would do in the private sector if the property was to be sold.

Currently, the strictures created by the Congress do not even permit us to undertake that feasibility study, but what I know from people in the business and what I know from folks who have looked at this property, the first step is to remove it from these artificial strictures of government that fail to permit us to operate it like a business.

So that would be step No. 1. Then we'd be in a position to get a clear snapshot on the value of the property. I would submit to you that it will be increased dramatically and, most important, in the legislation we intend to propose, we would like both the President and the Congress to be in a position to prevent us from going forward with the sale if in his opinion or in the opinion of the Congress the sales price is a giveaway. We don't want to do a fire sale for this property as well, but I'm clear on the fact that this is not the best business for the Government to be in.

Mr. YATES. Well, assuming that to be true, it's not the best business for the Government to be in, the fact remains that the American people own that oil, and that if that oil is to be sold, the American people are entitled to a fair price.

Secretary O'LEARY. I absolutely agree with you.

Mr. YATES. Okay, and I hope that every effort is made in connection with the sale of that property to take the necessary steps. From your testimony, it appears that you have given it considerable thought, and I hope that the appropriate legislative committees will help you out on that.

Secretary O'LEARY. Thank you. We'll seek that help.

And I'd like to correct my own misstatement by saying the ball park estimate put on the property with its current production is $2.6 billion, and the $1.6 billion figure is the net to Treasury, but I am convinced that if we were allowed to develop these fields as they should be developed, that the value of this property would increase dramatically.

Mr. YATES. Well, we have a precedent now. Perhaps we can draft some legislation for incorporating into our appropriations bill what

Mrs. O'Leary wants done and bring it to the floor, just as the Taylor amendment will come to the floor.

I'm through.

Mr. SKEEN. Are you through, Mr. Yates?

Mr. YATES. Yes.

Mr. REGULA. You would suggest we do legislation?

Mr. YATES. In the appropriations bill? Only if the Rules Committee gives a rule for the Taylor amendment. [Laughter.]

If it rejects the Taylor amendment, then——

Mr. REGULA. Do you mean that's legislation on an appropriation?

Mr. YATES. It is. I've never seen a 13-page legislative bill incorporated into an appropriations bill.

Mr. REGULA. You're an innocent bystander on this, Madam Secretary. [Laughter.]

Mr. Skeen?

Mr. SKEEN. Thank you, Mr. Chairman.

Madam Secretary, it's a pleasure to see you again.

Secretary O'LEARY. Thank you.

Mr. YATES. That it is.

Mr. SKEEN. Let me remind the gentleman from Illinois, too, that if he thought the Teapot Dome scandal was—one of the strange anomalies in that whole episode was the fact that the Secretary of Interior was indicted and convicted for taking a bribe, but the man who gave the bribe, Mr. Doheny, was never brought to trial, was never convicted of anything for giving it away. That's a very strange situation.

Mr. YATES. I thought he was brought to trial and found that Mr. Dohorty, either Doheny or Dohorty—who was the Attorney General at the time?

Mr. SKEEN. I think they must have been cousins.

Mr. YATES. That's possible. That's possible. [Laughter.]

Mr. SKEEN. We'll get off of that one.

Mr. YATES. Okay, cousin.

SALE OF ASSETS

Mr. SKEEN. I want to go to—I understand that you're reducing the Department's programs, and so forth, and I know that you probably enumerated all those. Would you give me just a quick summary of what your agency—what programs you're talking about?

Secretary O'LEARY. I will, indeed, and want to focus you very certainly on the fact that we're proposing not only in the commitments that we've made to reduce our budget dramatically, but also more dramatically than any other agency thus far. We're not proposing the wholesale gutting of programs. Rather, what we're proposing is a much more careful management of what we do and how we do it, and I'd like to cite very quickly how that is useful——

Mr. SKEEN. So you're not talking about an overall reduction in your budget?

Secretary O'LEARY. Well——

Mr. SKEEN. The reduction in programs would create a reduction in budget?

Secretary O'LEARY. I am, indeed.

Mr. SKEEN. Okay.

Secretary O'LEARY. And I want to be clear that we're not—

Mr. SKEEN. That's what I want to get clear.

Secretary O'LEARY. We're not talking about it for Fiscal Year 1996, and I have likened that to the one-time adjustment to charges that a corporation takes as it begins a very dramatic downsizing, but here are the areas where we're committed to find savings: $4.4 billion in the environmental restoration budget; $1.2 billion in our technology transfer or our applied research program; an additional $5.6 billion—I may have to come back and correct the decimal points—in the sale of assets, which I had outlined to you earlier——

Mr. SKEEN. Sale of assets?

Secretary O'LEARY. That's correct.

Mr. SKEEN. That's the——

Secretary O'LEARY. That would be the Power Marketing Administration. That would be the highly enriched uranium and that would be the Naval Petroleum Reserves.

Mr. SKEEN. Petroleum Reserves?

Secretary O'LEARY. In the area of capturing savings through realigning work, stripping out redundancies, and the work that the Galvin Commission has focused us on in terms of our relationships with our national laboratories, we propose to find $2.8 billion. And now somebody's going to kick me because I think I have left off something. What did I leave off? I didn't leave off anything. I've gotten to $14 billion.

Mr. YATES. Who would dare kick you?

Secretary O'LEARY. These people behind me, sir. [Laughter.] They help me.

Mr. SKEEN. That's the support group.

Secretary O'LEARY. That's more than the support group. I have to struggle to stay ahead of this group.

Mr. SKEEN. They're a very necessary part of this thing, I can see.

Secretary O'LEARY. They are, indeed.

Mr. SKEEN. While we're watching you, we're watching them because you can tell by their reflections about how well we're doing.

Secretary O'LEARY. How are we doing, sir? [Laughter.]

Mr. SKEEN. Doing quite well this morning.

Secretary O'LEARY. Thank you.

Mr. SKEEN. They're all pretty happy.

Secretary O'LEARY. Good.

OIL AND GAS RESEARCH

Mr. SKEEN. In that connection, then, let's go to the research element of this thing and also the property research with the private sector, particularly in the oil and gas industry——

Secretary O'LEARY. I'd like to. I'd like to.

Mr. SKEEN [continuing]. Because that's very critical to us. We're so dependent, because of the nature of the type of oil production we have, oil and gas production we have, on the kinds of research, particularly for enhanced recovery. And I understand that you're recommending some reduction as far as the agency's involvement in that research?

Secretary O'LEARY. Well, yes, we are and that's with a clear recognition that in the fossil fuel budget we're always struggling to try to balance the work we're doing on the supply side against our exploration work. In this year's budget what we have done is we've increased the money and the funds that we're asking for in the area of exploration and enhancing findings and——

Mr. SKEEN. Enhanced recovery?

Secretary O'LEARY [continuing]. And enhanced recovery and generally trying to bring more barrels out of U.S. fields. We have, quite frankly, focused for a very long time on improvements on supply side, both in terms of our work with oil and gas and certainly with coal. So we're moving our emphasis on increased production, quite simply, because we've looked very hard at what's happened in this past year and we've increased our imports, so that we're now, by measures that the National Petroleum Institute uses, importing more than 50 percent both petroleum and product from abroad, which was the thing that I had hoped that we would very well avoid on my watch, and we have not done that.

Mr. SKEEN. Well, are you also insinuating that you're going to reduce the research involvement from the public sector from your Department and turn more of it over to the private sector? If not, then, would you comment on whether or not you think about the private sector's ability or inability to pick up that research——

Secretary O'LEARY. Well, I'd like to start by pointing out to you that in the United States we spend, as a Nation, and through the private sector, less on research and development for technology than do our major international competitors, and this is certainly the case with both Japan——

Mr. SKEEN. You're putting more in research?

Secretary O'LEARY. We're putting less——

Mr. SKEEN. Less?

Secretary O'LEARY [continuing]. From corporate America, less in research, and I——

Mr. SKEEN. The corporate sector is putting in less?

Secretary O'LEARY. Exactly, and I could comment on why.

Mr. SKEEN. I would like to hear that comment.

Secretary O'LEARY. I think two trends are obvious. One, corporate America is very focused on the short term. Results in the planning cycle for a corporation normally turn out to be two to three years, sometimes six months. High-risk investment, which is what R&D generally turns out to be, is something that corporate directors and leadership are now very loath to invest in because of the pressure to produce real results over the short term.

R&D, on the other hand, generally takes about a 10-year, sometimes a 20-year——

Mr. SKEEN. A very long cycle.

Secretary O'LEARY. So we're not keeping pace with the competitors. Mr. Chairman, I was in India and China, trying to position the United States to stay ahead. That's number one. So we have a problem there.

Two, the investments we do within the Department of Energy and generally in our administration are not clear giveaways where the Government makes an investment in R&D——

Mr. SKEEN. Those investments in research?

Secretary O'LEARY. That's right. Half and half, and, generally, in our experience we do better than that. In our clean coal technology, for example, we've got two dollars outside of the Government for every one dollar that the U.S. taxpayer pays. In oil and gas it tends to be about 57 percent from the private sector with the Government taking its 43 percent share, if I'm correct.

CLEAN COAL TECHNOLOGY

I think what we need to focus on is the benefits from those. And if we look at recent technology deployed into the marketplace for our programs that we are now asking funding for, I can give you better than a cost-benefit analysis of one to one. So the investments that the taxpayer has already made are paying off in products sold in the United States and in jobs created as well. The figure this month focuses on the clean coal technology program, where we can account for $9 million in sale of new clean coal technologies, most of it abroad, quite interestingly, which creates good jobs at home, makes us more competitive, where that program has spent approximately $7 billion. So we're already ahead of the game with a very modest share of these programs now finally having product ready for sale.

As we move forward, as more of these programs develop, so that we have actually clean coal technology to sell, that number will increase dramatically. This has been the case in our investments in oil and gas technologies as well, where we can see increased production from technologies used and savings in drilling of wells and the like. So we've got cost-effective programs which are shared by industry which give us the clear signal that the technology that we are investing in is correct because the private sector is willing to make that investment to cost share.

ENHANCED OIL RESEARCH

Mr. SKEEN. One comment I'd like to make, so far as this research and how vital it is to us and whether or not corporate or individual, a lot of the private producers or small producers, individual producers, or whatever, independent producers——I should say independent sector producers——don't have the wherewithal to maintain that research as the corporations would. Corporations also are very sensitive about turnaround on profit. I mean, if you're a corporation, then you depend on profit. They're not like farmers.

Secretary O'LEARY. I agree.

Mr. SKEEN. We'd like to make a profit, but so we say we don't. Anyway, that's the reason why I'm pinpointing this research effort and the involvement because it's been so vital that the Government's part of the thing has been real initiative that's kept this thing going and also created, I think, the increases in production that we've gotten from the enhancement program.

Secretary O'LEARY. I absolutely agree with you, and we depend on the independents, who are generally producing from very marginal wells—that is, high cost to produce——

Mr. SKEEN. Stripper wells.

Secretary O'LEARY [continuing]. Stripper wells and other wells——

Mr. SKEEN. Ten barrels a day or less.

Secretary O'LEARY. Exactly. But their problems are even greater because the margin of profit that they are receiving is de minimis, sometimes counted in cents as opposed to dollars.

Mr. SKEEN. Exactly.

Secretary O'LEARY. And so investments that they have to make in applied technology come very dear to them, but they provide traditionally anywhere between 40 and 59 percent of the petroleum produced in the United States, and it's very important for us as a country to keep those wells in production while we wait for some further pricing that now makes it more economic to explore and to produce from those wells. We're at a very critical juncture where this technology has a great deal to add to this segment of the industry.

Mr. SKEEN. You view the domestic production then as sort of a cushion, a window, or a protective cushion against the import picture?

Secretary O'LEARY. I view it as critical to maintain, and I am concerned every time a well is shut in because that is oil production that we have lost.

Mr. SKEEN. I think my time is up. May I ask one——

Mr. REGULA. Go ahead, yes.

WASTE ISOLATION PLANT PROJECT

Mr. SKEEN. I wanted to say something about WIPP.

Secretary O'LEARY. Thank you, sir. [Laughter.]

Mr. SKEEN. I knew that you were just——

Secretary O'LEARY. Thank you, sir.

Mr. SKEEN [continuing]. Dying for me to make a comment on it. I appreciate what you had to say in the earlier meeting that we had earlier this session of Congress. Have we made any progress with EPA on the agreements on the testing?

Secretary O'LEARY. We've made significant progress, and just last week I heard from my colleagues working in environmental management of the details on some of the technical issues that we thought might be a problem have been well worked out. I was scheduled to be in Carlsbad, in two or three weeks. I've had to delay that trip. The purpose of that trip was to attend an executive program review to insure that we maintain our pace of keeping our milestones, and I have every confidence that I will be in Carlsbad sometime in early April. At the moment, I am comfortable with the fact that our relationships with all of our regulatory agencies continues to be professional and that we are answering their technical questions as we move forward.

We're in a posture now where we're actually permitted to provide draft findings to the Environmental Protection Agency. So they will have a chance to review certification requirements and give us some guidance as to whether or not there's technological information that needs to be added to the record. I think this will be very helpful to both the regulators and to the Department of Energy and the citizens of the country, as we move to open this facility.

Mr. SKEEN. I appreciate that and I appreciate your interest, and I also appreciate the fact that you're trying to expedite this thing to the very best possible extent that you can.

One idea I'd like to float to you right today is the feasibility or the possibility of making a test run with at least a small amount of that phrenogerenic waste into the Carlsbad area. We've never made a run yet. We've had those people practicing and practicing and practicing now for 10 years. I think we've worn out three sets of trucks, no telling how many canisters. But just the possibility of running a test just on trafficking it in and out or down in the hole and out, just, for once and for all, to establish the fact that it can be done and it should be done.

Secretary O'LEARY. I understand your point, and when I arrived in this job, that was one of the issues that was ripe for decision-making. Listening to any number of experts who work with me and talking from lots of concerned citizens, I became convinced that we would not advance the cause of opening that facility by simply doing a test entombment, and I continue to believe that that was a correct decision.

Mr. SKEEN. Well, if you want to—I can agree with you. If you want to generate a little heat, that's the way to do it. [Laughter.]

And I'd like to generate a little heat.

Secretary O'LEARY. I've been trying——

Mr. SKEEN. And I understand you're being very diplomatic and I appreciate it.

Secretary O'LEARY. I've been trying to avoid lots of heat, sir. [Laughter.]

Mr. SKEEN. I understand that. Well, you're going to catch it in one way or another, and I am, too. But, as ergo the situation with the MRS system and now the second vote with the Mescalero Apaches—we're having all kinds of fun down there.

Secretary O'LEARY. Well, nobody said it was easy work.

Mr. SKEEN. No, but if it was easy, everybody would be doing it. [Laughter.]

Thank you very much, Madam Secretary. I appreciate your response.

Mr. REGULA. Mr. Nethercutt?

Mr. NETHERCUTT. Thanks, Mr. Chairman.

Welcome, Madam Secretary. Nice to have you back.

Secretary O'LEARY. Thank you, sir.

SALE OF POWER MARKETING ADMINISTRATIONS

Mr. NETHERCUTT. I noted with great interest your comments about marketing, sale of marketing agencies, and you didn't include Bonneville, obviously. And I want to just solidify for the record your reasons why you don't think that's appropriate. I happen to agree with you.

Secretary O'LEARY. Fair enough. Quite frankly, when one looks at Bonneville's streams of liabilities and one applies good commonsense business analysis, even on the back of the envelope, one recognizes that the sale of that property or asset would be so high in contemplation of the many liabilities now a part of the Bonneville system, it makes it an uneconomic choice. Perhaps more importantly, the recognition on my part, having come from the industry, is the rate shock occasioned by the sale of that asset with its attendant liabilities would sink the very principle that the President has asked to move forward with. That is quite simply that we would control any adverse impact occasioned by rate increase.

Mr. NETHERCUTT. In other words, who's going to buy it with the debt that it has?

Secretary O'LEARY. Someone might, but that cost would be too dear at this time.

Mr. NETHERCUTT. Sure.

Secretary O'LEARY. And so we must work on those issues.

Mr. NETHERCUTT. Do you support the restructuring of the debt for Bonneville?

Secretary O'LEARY. I did last year, and I continue to believe that that is an issue that needs careful examination, and I'm very anxious to work with those who are struggling with this initiative this year.

ENVIRONMENTAL CLEANUP AT HANFORD

Mr. NETHERCUTT. Okay. I want to turn to another question I'm sure is dear to your heart, and that's Hanford.

Secretary O'LEARY. Yes, sir.

Mr. NETHERCUTT. Do you see—well, first of all, are you satisfied with the progress that's being made thus far in the cleanup operation, or is that a fair question?

Secretary O'LEARY. It is a very fair question, and I have to say this on behalf of myself personally, but, most importantly, on behalf of the people who do the day-to-day work in that area and on the site: that I am very proud of the progress made in the two years and now almost approximately two months since we have been on the job. There's, of course, always room for improvement, and I'm well aware of the fact that a former colleague of ours will be announcing a report today that focuses on some areas where improvement is desired. Part of what the Galvin Task Force looked at, I believe in a very shallow way, was how that program had been managed prior to the Clinton administration's coming to office. But, of course, there's room for improvement, and some of the improvements to focus on are requirements to reduce cost, but at the same time to see that the work is accomplished and that we're focusing on work that we have the technical capability to accomplish.

So I look forward to a very vigorous year of debate, both with you and people at Hanford, as we take advantage of all of the assessments that have been done on our work and seek to further improve them. That has to be on cleanup, and the actual cleanup of sites that are now available to be tackled. The quality mode is continuous improvement, and that's what I'm focused on at Hanford and at all of our sites.

Mr. NETHERCUTT. Do you see any increased role for alternative cleanup assistance, for example, through the Corps of Engineers? Do you think that the Corps of Engineers can do more within their budget, for example, to assist in the whole cleanup effort, or is that not an option as far as you're concerned?

Secretary O'LEARY. I think all options are on the table, and as we seek to find this $4.4 billion in savings over time, that is one we'll examine. In the 103rd Congress, there was expression of the idea that the Corps of Engineers take over the whole thing. I did not embrace that proposal because I think it's almost like saying, oh, well, it's so bloody hard, let's just move it, than to try many new models and to judge and measure which new models seem to be providing the best results, both in terms of cost and cleanup. So we have been working very closely with the Corps of Engineers. We've been also working with some clear models of privatization to see which of these models works best. My suspicion is that we will find that there's something to be taken from many of them, but we ought not to make this decision without clearly understanding impact. I think we're laying in place the means to understand that.

Mr. NETHERCUTT. When might the right model take hold? And I'm not being critical of you.

Secretary O'LEARY. That's all right.

Mr. NETHERCUTT. When will we make the decision? Are we looking at two years? Are we looking at one year? Are we looking at ten years? I mean——

Secretary O'LEARY. No.

Mr. NETHERCUTT [continuing]. How many models will we need to explore before we find the right one?

Secretary O'LEARY. Well, one could get in the business of exploring and never find America——

Mr. NETHERCUTT. Exactly my point.

Secretary O'LEARY. We don't want to do that. I think the clear pressures on the Department are next year at this time in reporting the Fiscal Year 1997 budget is to have some clear markers down. You understand, of course, we've just come through contract reform where we have moved from a cost-plus modality—and this is far too glib to have anybody take it seriously, but I also try to communicate so real people can understand this. It would be almost as though I were building a house and I said to the contractor, "Here's some plans. Go build whatever you can and let me know what it's going to cost, and I'll give you a 10 percent profit over that."

Mr. NETHERCUTT. Right.

Secretary O'LEARY. Well, that was not the way Government business ought to be run. That's not the way I would run my personal business.

Mr. NETHERCUTT. Unless you know the contractor and trust him that well.

Secretary O'LEARY. I wouldn't know one that I could——

Mr. NETHERCUTT. Yes.

Secretary O'LEARY [continuing]. And now I'm going to hear from the contractors of America. [Laughter.]

But just as one would manage one's own business, one sets up performance measures and goals to be met. And so we have now in the hopper two recompeted contracts which give us that model. We have also renegotiated any number of contracts where we've set out clear guidelines. I think you heard my line about the past of the Department. We found in the record a contract that said at Hanford "this is a contract to build a secret weapon"; that was it. Well, we've matured well beyond that, and now at least understand that we have to ask for specific performance. The down side to the contractor, who, quite frankly, prefers this model to the other or micromanagement, is to simply indicate what is to be delivered, and if you don't deliver it, you get no bonus. You simply are paid for the work you perform, but you, in fact, have no opportunity to earn a profit. That seems to me a model that works. I know it certainly has worked in my life.

So we'll move forward with that, and we'll move forward with other efforts at privatization, many of which have taken place at Hanford, as well as the Corps of Engineers model. Now what I'll commit to you is when I arrive here next year for Fiscal Year 1997, not only are we talking to you straight about models, but we're also showing the trajectory to do two things: accomplish these savings and accomplish clean up as well.

Mr. NETHERCUTT. Between now and then, will the use of the Corps be static; will it be increased, or is it something you're going to be continuing to study? It seems to me—and I'll be frank in saying that I know you're devoting more of your day, I'm sure, on this whole subject, and your staff is, certainly, than we're able to here, but isn't there some ability to use the Corps of Engineers like now, without another year of analysis?

Secretary O'LEARY. That is now occurring——

Mr. NETHERCUTT. Yes.

Secretary O'LEARY. The only way, in my belief, one can analyze is to have the actual work being performed.

Mr. NETHERCUTT. Sure.

Secretary O'LEARY. Assistant Secretary Tom Grumbly has been engaged in negotiations with the Corps of Engineers since last year at this time, when we first started this discussion. What I'm embarrassed to tell you is that I cannot by project, by site, indicate to you where this work is going on, but I will provide it for the record by close of business this week and now know that I need to understand those facts the next time I see you, and I will take care of that as well.

Mr. NETHERCUTT. No, but I appreciate it. I'm not trying to test your memory.

Secretary O'LEARY. That's okay; trust me. It's okay.

[The information follows:]

ENVIRONMENTAL MANAGEMENT PROJECTS AT HANFORD

Listed below are the current site projects at the Hanford Site in Washington.

100 Area

This area holds 9 surplus plutonium production reactors and support facilities on the bank of the Columbia River. One of these, the N-Reactor Deactivation Project, includes over 100 buildings in the process of being deactivated. There are 25 CERCLA operable units in this area in different stages of assessment.

FY 1995 Planned Activities

- Perform expedited response action at North Springs Site.
- Perform remedial actions activities at three operable units.
- Complete demolition of 190 D High Bay complex (pumphouse).
- Complete demolition of 1701-FA Gatehouse building.
- Complete demolition of 1702-DR Badgehouse building.
- Conduct decommissioning projects which include:

103-B Riggers Loft
104-B-1 Tritium Vault
104-B-2 Tritium Laboratory
105-B Reactor Building
116-B Exhaust Stack
185-B Water Treatment Plant
190-B Main Pump House
1608-B Gas Line Pressure/Vacuum Seal House
1701-BA Exclusion Area Badge House
105-C Reactor Building
183-C Filter Plant/Pumproom
190-C Main Pump House
1702-C Bade House
1714-C Solvent Storage Building
105-D Reactor Building
116-D Reactor Exhaust Stack
105-DR Exhaust Air Filter Building
119-DR Exhaust Air Sample Building
1702-DR Area Badge House
105-F Reactor Building
108-F Biology Laboratory Building
1701-FA Gate House
105-H Reactor Building
1713-H Warehouse
1720-HA Arsenal

167-K Crosstie Tunnel Building
182-K Emergency Water Reservoir and Pump House
105-KE Reactor Building
110-KE Gas Storage Facility
115-KE Gas Recirculation Building
116-KE Reactor Exhaust Stack
117-KE Exhaust Air Filter Building
166-AKE Oil Storage Facility
1702-KE Badge House
1713-KER Warehouse
105-KW Reactor Building
110-KW Gas Storage Facility
110-KW Gas Recirculation Building
116-KW Reactor Exhaust Stack
117-KW Exhaust Air Filter Building
165-KW Power Control Building
1702-KW Badge House
1714-KW Warehouse

Area 100 Resource Conservation and Recovery Act closure subprojects include:

- 183-H Solar Basins (originally part of the 183-H Filter Plant which provided filtered and treated river water and reservoir capacity for the reactor operation).
- 100 D Ponds (liquid disposal unit that may have received nonradioactive, regulated dangerous waste).
- 1301-N Crib
- 1325-N Crib

200 Area
This area was used for chemical reprocessing and waste management. There are 45 CERCLA operable units in this area in different stages of assessment.

FY 1995 Planned Activities

- Perform one expedited response actions (carbon tetrachloride contaminated soil).
- Conduct groundwater treatment treatability tests at four sites
- Complete plutonium removal activities at 232-Z Waste Incineration Facility.
- Conduct decommissioning projects which include:

U Plant Facility
Reduction Oxidation Facility
221-U Canyon Building
271-U Office Building

276-U Solvent Handling Facility
291-U Exhaust Fan Facility
202-S Canyon Building
233-S Plutonium Concentration Facility
276-S Solvent Handling Building
291-S Exhaust Fan Facility
233-SA Exhaust Filter Building
292-S Jet Pit House
293-S Off-Gas Treatment and Recovery Building
2711-S Stack GAs Monitoring Building
2718-S Sand Filter Sampler Building
2904-SA Cooling Water Sampler Building
212-N, 212-P, and 212-R Storage Building

Area 200 Resource Conservation and Recovery Act closure subprojects include:

- B Pond and B Pond By-Pass - series of ponds that received waste water from various operating facilities.
- 216-A-10 Crib (200 Area) - crib located in central processing area.
- 216-U-12 Crib (200 Area) - crib located in central processing area.
- 216-A-36B Crib (200 Area) - crib located in central processing area.
- 216-A-29 Ditch (200 Area) - ditch used to transport liquid waste.
- 216-B-63 Trench (200 Area) - trench that received effluent from facilities floor drains and chemical sewer wastes.
- 216-S-10 Pond & Ditch (200 Area) - pond that received chemical sewer waste and later cooling water.
- Hexone Storage and Treatment Facility - hexone underground storage tanks built for temporary storage of solvent for REDOX process.

300 Area
This area was used for fuel fabrication and research and development. There are currently three CERCLA operable units in this area, with two operable units expected to have Records of Decision by September 1995. Resource Conservation and Recovery Act closure subprojects include the 300 Area Process Trenches located in the Fuels Fabrication Area.

FY 1995 Planned Activities

- Perform expedited response action at 618-10 Burial site.
- Perform remedial design work at 300-FF-1 which contains many of the current and past 300 Area waste disposal units.

1100 Area (All remedial work in this area is being performed by the Army Corps of Engineers)
This area was used for vehicle maintenance. There are 4 CERCLA operable units which are expected to be remediated by September 1995.This represents the first National Priorities list site remediated at Hanford.

FY 1995 Planned Activities

- Perform remediation per the Record of Decision.
- Completed remediation of the North Slope
- Completed remediation of Arid Lands Ecology reserve

Hanford Facilities Under Construction in FY 1995
Steam Plant Electrical Safety Improvements
2711E Shop Expansion
Standby Generator Building 3621 B/C
300 Area Sewage Treatment System Upgrades
FY 93-96 Groundwater Monitoring Wells
Sample Equipment Cleaning Facility
200 Areas BAT/AKART Implementation
Office Addition, 318 Building
Office Addition, 324 Building
325 Building Compliance Renovation
Safety Compliance 324/325 Buildings
384 Building Control Room Expansion
384 Building Power House Upgrades
329 Building Compliance
B Plant Process Condensate Treatment Facility
242-A Evaporator/PUREX Plant Condensate Treatment Facility
200 Area Treated Effluent Disposal Facility
Fast Flux Test Facility Shutdown Ion Project
Railroad Upgrade - Mainline
Road, Ground, and Lighting Safety Improvements
Hanford Infrastructure Underground Storage Tanks
Fire Alarm System Improvements, 300 Area
Plutonium Finishing Plant Waste Water Disposal
234-5Z Drainage Containment
Plutonium Finishing Plant Effluent Stream Discharge Line
RMW Land Disposal Facility - First and Second
RMW Land Disposal Facility - Second Trench
Tank Farm Lighting Upgrade (SY and DC Tanks Farms)
107-AN Caustic Addition
Tank Farm Ventilation Upgrade

Tank 101-AZ Waste Retrieval System
200 East Stream System Rehabilitation, Phase II
300 Area Electricity Distribution, Conversion & Safety Improvements
Waste Receiving and Processing Facility (WRAP)

Hanford Facilities Being Designed in FY 1995

300 Area Clearwell Pump/Motor Upgrade
Reconfigure 230KV Transmission System
300 Area Diverter Stations Upgrade
2607-W6 Drainfield Replacement
200-VP-1 Modified RCRA (Subtitle C Barrier)
222-S Radioactive Liquid Waste Line Replacement
219-S Secondary Containment Upgrade
Support Warehouse 324 Building Vicinity
Phase II Effluent Treatment and Disposal
Interim Exam Cell Enhancements/Cask Loading
Fast Flux Text Facility Sodium Storage Facility
Hazardous Materials Management Emergency Response
Multi-Function Waste Tank Facility (MWTF)
Enhanced Radioactive & Mixed Waste Storage
Solid Waste Retrieval Facility
Water System Upgrades - Reservoir
300 Area Process Sewer Piping System Upgrade
Tank Farms
- Aging Waste Transfer Lines
- Replacement of Cross-Site Transfer System
- Initial Tank Retrieval Systems
- Tank 241-C-106 Sluicing
- 209E Septic System Upgrade

Mr. NETHERCUTT. May I have one final question, Mr. Chairman?

Mr. REGULA. Yes.

REALIGNMENT INITIATIVE

Mr. NETHERCUTT. I notice in your statement that you'll be reducing the employee staffing level by 12 percent from Fiscal Year 1993 by the end of Fiscal Year 1995. Which percentage of these employees are working out of Washington, D.C., versus other parts of the country?

Secretary O'LEARY. I understand your question. I'm not certain yet, and you need to let me explain to you why.

Mr. NETHERCUTT. Sure.

Secretary O'LEARY. We are now in the middle of what I am calling, after my experience in the private sector, an alignment review, where we've got the people working in the Department of Energy who know it best——

Mr. NETHERCUTT. Sure.

Secretary O'LEARY [continuing]. Both field and headquarters, taking a look for us at how we de-layer and get rid of this tremendously burdensome layer after layer of people who are simply reviewing the reviewers who are reviewing the reviewers.

I have some personal experience in this area which says to me the first thing you want to be certain of is you've got people in the field actually relating to people on the ground. So the prejudice in my mind goes toward deploying more people to the field where they do hands-on work. That prejudice I believe is embraced by the people who are working on our alignment steering committee, as well as a group of outside experts from the private sector who have their own experience and success of doing this work.

What that points to is now redundant review at operations and site offices and within headquarters. My suspicion is that that is the recommendation that will come forward to the Secretary of Energy. What I have committed to do is to receive these recommendations and act on them. I've also asked for alternatives. But you need to know that my prejudice is toward putting people where the work is, as opposed to having them in a posture of simply reviewing the rubberstamping.

Mr. NETHERCUTT. Sure. Wonderful. Thank you.

Secretary O'LEARY. But there's a ton of redundancy out there in the field, too; I want to be clear on that.

Mr. NETHERCUTT. I understand.

Secretary O'LEARY. Okay. You know it.

Mr. NETHERCUTT. I do, indeed.

Thanks, Mr. Chairman.

Mr. REGULA. Mrs. Vucanovich?

Ms. VUCANOVICH. Thank you, Mr. Chairman.

Madam Secretary, welcome.

Secretary O'LEARY. Thank you, Mrs. Vucanovich.

Ms. VUCANOVICH. I appreciate your coming again in front of us. Obviously, when you come, you know you have to be prepared for questions on WIPP and Bonneville and Hanford and the nuclear test site and the Yucca Mountain, and so forth.

Secretary O'LEARY. Right.

Ms. VUCANOVICH. And I do have to just ask you—you know, when you were here in January, we talked to you about Senator Johnston's interim storage bill——

Secretary O'LEARY. That's correct.

Ms. VUCANOVICH [continuing]. And I think maybe you didn't want to comment at that time. And now in the House we have a companion bill. Are you in a better position to give us your position on the idea of changing the law to allow construction of an interim nuclear waste storage facility in Nevada?

Secretary O'LEARY. I am, indeed.

Ms. VUCANOVICH. Well, I'd be very interested in your comments.

Secretary O'LEARY. Fair enough. I have testified on the legislation before the Senate Energy Committee and did that, I think, approximately 10 days ago. I did that after a public meeting where we invited many stakeholders to come and discuss with us principles for legislation. So I addressed principles, and I'm prepared to do that today, and perhaps answer some more detailed questions which you might want to put to me.

I have long held the opinion, after receiving copies of lawsuit after lawsuit, that the Department of Energy, and the Secretary of Energy specifically, have some responsibility to insure that there is an interim facility available as utility storage pools run out of space for receipt of spent fuel rods.

You've heard me testify before that the legislation had my hands tied because the current Nuclear Waste Policy Act does not permit the Secretary of Energy to go forward and even seek opportunity for signing of an interim facility until we have certified that the long-term repository can be built. That interim storage facility was to have been built by 1998. That will not happen, simply because I have no authority. My nuclear waste negotiator's authority has lapsed.

So what I testified to 10 days ago was a set of principles, ones that unlock the Secretary of Energy's hands. We need to get on with building by first siting an interim facility. I have also said that I believe that we should continue the work of completing the characterization of the long-term facility or the site at Yucca Mountain because we need to know whether or not we can progress and, most importantly, as we now begin to dismantle our nuclear weapons. We have need and requirement not for one long-term repository, but we have need for two. So we need to get on with that.

I also, in my articulation of the principles thought important to be contained in language said I would also like some contingency authority to plan against the occasion that Yucca may not be a suitable site, once the data is characterized. I could not imagine having a weight of responsibility as the one I have without any authority to develop contingencies.

I went further and indicated that I also believe that it was very important not to shortchange the public in matters of public participation, and so I wanted no shortcuts there. I do not believe that it encourages public trust when the Government takes shortcuts against standards that are known and expected. I also indicated that I did not want shortcuts with respect to existing environmental requirements. Those were the standards that I articulated. The one I think I have left out is one of adequate funding, and that is to continue to make the request that the Department of Energy have at its hands the necessary funds to complete this work, so that by 1998 on Yucca I'm in a position to say yes or no on the science and the technology. Those are the criteria that I outlined, and I believe it is very important that I continue to outline those criteria.

Ms. VUCANOVICH. And you, obviously, didn't take any position about whether it should be in Nevada——

Secretary O'LEARY. No, I did not.

Ms. VUCANOVICH [continuing]. But that is part of the legislation. And I'm sure you're aware of the recent comments by the Los Alamos Laboratory scientists regarding the potential for a nuclear explosion, should the Yucca Mountain repository be built, and, obviously, people in my State are very alarmed by this because it was the scientific community who brought this into the open, and I don't know if you'd like to comment about that.

Secretary O'LEARY. I do, indeed, want to comment, and I thank you for providing me this opportunity. First of all, I'd like to tell you that I became aware of these facts by reading them in the Sunday New York Times. You can imagine——

Ms. VUCANOVICH. Yes.

Secretary O'LEARY. I now need to point out to you that the authors of this study are two scientists in a galaxy where the Department of Energy has three national laboratories that engage themselves on issues involving weapons and another ten that engage themselves in issues involving criticality of nuclear storage. I would further point out to you that the two scientists doing this work did not have that assignment, but instead have another assignment which involves an alternative for spent fuel, which is the use of an accelerator to transmute plutonium.

I would also want to make you aware of the fact that when the draft of this study was presented at the laboratory, the laboratory director himself asked for three other teams to, if you will, challenge or vet the findings in the draft study. These facts were not known to me until last week.

So there are three separate teams that have examined this work who have in their opinion reached the conclusion that some of the findings are faulty——

Ms. VUCANOVICH. Or biased.

Secretary O'LEARY [continuing]. Or biased perhaps, and the two scientists who were responsible for the draft study have now gone back and they have completed a final study which will now be open to peer review. That is a process we go through in our laboratories. It would be unseemly, in my view, to simply say, because someone has a point of view with which others may not agree, with which other scientists disagree, that we should somehow squash or quash that academic freedom. So what will now occur is that this work will go through peer review, which in my mind is what should have happened in a very logical order.

I have no idea how these facts got leaked. I certainly know that the season is ripe; we're dealing with appropriations now. But I want to make it clear that I did not know these facts when I testified before you on the last occasion, nor did I know them when I testified before the Senate Energy Committee.

Ms. VUCANOVICH. Well, I appreciate that answer because it is alarming when you think of these things, if this is true, but, as you say, they may be biased.

NEVADA TEST SITE

The time is moving quickly, but I'd like—of course, I'm concerned about our Nevada test site. Are you doing anything to encourage new DOE projects being developed at our test site? Is there anything going on that we need to know about?

Secretary O'LEARY. Well, I think I reported to you on the last occasion that we were together on the work going on with the solar technology.

Ms. VUCANOVICH. The solar technology.

Secretary O'LEARY. Our Under Secretary Charlie Curtis was just at the site last week. I believe he arrived on Monday back from Nevada, and so I've not had a chance yet to be debriefed with respect to some of the issues that have been discussed there for expanding the use of the site. You know, of course, that we've continued and last month did a test using explosives. It is clear to me, as it has been since I've taken this job, and as is the case at each one of our sites, as one mission begins to be withdrawn, we have an obligation to insure that new missions are identified. Much is the case with the solar technology and the private sector investment there. Our bias is to identify private sector initiatives, and I know that you would want us to do that as well.

Ms. VUCANOVICH. Well, definitely. We're very supportive of that. I appreciate your being here, Madam Secretary, and your candid answers.

Thank you, Mr. Chairman.

Secretary O'LEARY. Thank you.

REDUCTIONS IN FY 1996 FUNDING

Mr. REGULA. I have several questions and I'll have questions for the record, but for the members that are here we'll go around again, if you have additional questions. So I won't take too much of the time. You may have some other things that you would like to ask.

Madam Secretary, as I said earlier and as you're well aware, we may have to reduce 1996 funding. If this were the case, what would you eliminate or reduce in your programs?

Secretary O'LEARY. Well, Mr. Chairman, I've had that question asked of me by others. I'd like, with your permission, to make this offer to you and this entire subcommittee—is I'd like the opportunity to continue now an effort that we've gone through each year in the Department of Energy. We prioritize our budget. You asked me to go back and take a fresh look at from zero base. We have done that. I would like the opportunity to come to you within a week with some proposals about how you might best look at this budget. What we have done is take the priorities that were developed as we put this budget together through the summer and the fall of last year, and I've gone back to Assistant Secretaries and line managers and asked them to outline their priorities.

I would like to raise a couple of issues because I know that they could be targets of opportunity, and that is, I know that you will be looking at the areas in which there are increases. I believe it's very important to focus on those programs that permit voluntary activities, especially in the energy efficiency area, to flourish because, without them, in another two years someone will be back with command and control. In the energy efficiency area, especially if we don't get the vehicle increase, along with the science and technology that will allow us to get a far more efficient car, the next Secretary of Energy, or whoever has the job in the next five to six years, may be saying, "if they had only done something about the consumption of gasoline in automobiles". That says to me that we need to protect our alternative fuels programs and we need to protect the work we're doing in the automotive industry.

But I'd like the opportunity to let my key lieutenants put their own scalpels to their budgets, and I will tell you, quite frankly, that my suggestion would be, within the purview of this committee, that we not zero out anything, but allow us to cut it, and allow us to cut it in a way that I would be pleased to share with you. I also want to make it very clear that I'm not going to do a formal submittal because I think my colleagues at the Office of Management and Budget would likely go through the overhead. Having put that on the record, I now will want to be clear that I will share with them what I'm proposing to share with you, but I'd be pleased to do that with you and through staff of the other members of this committee, if you believe that that's appropriate.

Mr. REGULA. Are you saying with a formal document or with an additional hearing, or how would you present this?

Secretary O'LEARY. I would prefer to do it without a formal document, and I would prefer to do it staff to staff, as in my belief it might permit us to expedite this process. I think, quite frankly, if we try to set another hearing, then we will have to go through a detailed review of budget and proposal and signoff by more people than I could count.

Mr. REGULA. So you'd like to do it on an informal basis?

Secretary O'LEARY. I would very much, sir. It's clear that I'm going to share this with my colleagues at the Office of Management and Budget, however.

Mr. REGULA. But—well, probably we will not be marking up before May. So this will give you an opportunity at the staff level to make some of your suggestions.

Secretary O'LEARY. Thank you.

Mr. REGULA. And, hopefully, we'll know as a committee what kind of numbers we're going to have from the Budget Committee prior to that time, so we know what we're talking about in terms of reducing spending.

ELIMINATING DEPARTMENT OF ENERGY

As you know, Senator Dole has talked aggressively about eliminating the Department of Energy. But if you were to defend the Department, how would you counteract his ideas?

Secretary O'LEARY. Well, with the greatest respect, I'm relatively perplexed by Senator Dole's comments because just two weeks earlier, as he was commenting on our foreign policy, the Senator himself, in a very formal speech, indicated that he thought very shortly issues involving petroleum in the use of energy would shape our national security policy and we were chided for not attending that area.

I have thought, as I've focused on this issue countlessly, that one ought to ask two questions: are there policy initiatives in energy that require someone at the Cabinet to be expressing a point of view strongly, both in terms of experience, technology, and, if you will, advocacy for a specific strategic industry? If one considers that either the national defense is a strategic industry or a strategic Government interest, or that energy itself, as the Senator has indicated, will affect our national security over the near term, or if one considers the business of cleaning up from the winning of the Cold War our nuclear weapons waste, and if one would consider that the science and technology, which forms the very heart and core of our competitiveness, and has formed the very heart and core of our ability to win the Cold War, are important initiatives, then I would submit to you somebody had better be representing those points of view as a matter of policy, and also shaping public policy and implementation.

I strongly believe that if you examine those four areas that I've articulated and add to it one of international competitiveness, which becomes very important over the short term and the long term, then one is left to be compelled with the idea that somebody had better be in charge of this work. Now after that, one asks the question: is it being managed well in its current configuration? I would have pointed out in my formal testimony that in the time I've been on the job we've already identified $5 billion worth of savings. I don't believe that the analysis now planned for dismantlement of the Department of Energy contemplates anything of that size, nor does it contemplate the savings that I'm committed to deliver to the Congress over five years, which amounts to $14 billion. I think if someone else can do it better, they ought to have the job. Until that is proved, I believe that this Secretary of Energy, managing this work under the organizational structure that makes the most sense both to the Congress and the administration, is going to be with somebody that very much looks like the Department of Energy.

In the final analysis, the American public will speak out, but I also believe that they ought to hear at least of the progress made in the time that we've been on the job and look very cautiously to the work that needs to be done and is not nearly completed in the four areas that I have described. None of this work is finished.

Mr. REGULA. You're simply saying that if these duties were reassigned to other agencies, that the cumulative cost might be greater than having it focused in your agency?

Secretary O'LEARY. Absolutely. I'm also saying that someone needs to be speaking out in public policy arenas about these issues, and I will tell you jolly well that I could not have met with the Premiere of China and 17 other Cabinet officials when I was in China had I been an Assistant or Under Secretary of Commerce. It just wouldn't have happened. We would have left that $6 billion worth of sales of U.S. equipment and technology on the table. It would not have happened.

U.S. TECHNOLOGY IN FOREIGN COUNTRIES

Mr. REGULA. Speaking of China, I notice in the publication "Coal and Synfuels Technology," they're a little skeptical about the potential there, and they say, while the energy market is large, that the share that will go to imported technology is small. And I think the implications are, if you read on, that they'll just copy our technology and make it their own. It says that they are interested in environmental cleanup, that that's becoming a serious problem. I think you mentioned that earlier in terms of your experience in Shanghai.

You've been there and, likewise, in India. What do you think the hazards are of our taking technology to these countries and then finding that they not only manufacture for themselves, but for export?

Secretary O'LEARY. That's a real concern in whatever foreign country you do business, which is why the business of the intellectual property rights and patent rights, and the like, became a very important issue and was very much in the news as Ambassador Barshefsky and I were both in China, headed down, I believe, two very similar tracks. You know that that negotiation was very successful.

The world market for energy production and technology is too large to ignore. The Chinese have indicated that, with their need, that some of us quantify over the next 11 or 12 years to be $300 billion, that they want 25 percent of that to go to foreign markets and to foreign investors and to foreign technology and foreign venture capitalists.

The private sector is well aware of what it takes to protect its technology. We have done that and, more importantly, in our administration we're setting up a set of checks and balances, both in our intergovernmental or bilateral agreements on protection of intellectual property and in our business-to-business agreements, to insure that we protect this technology, but we cannot be simply timid to stay away from a market because this chance to have our technology stolen might exist. We simply need to be vigilant in protecting it, and that's a matter of writing a contract and it's a matter of insuring that we have the correct international treaties, and that we are doing.

If we miss this market, we will miss the opportunity to develop at home as well. The market for clean coal technology, is moving to Asia faster than it's moving here, and we want to stay in this market and we want to keep our edge.

Mr. REGULA. Mr. Skeen?

Mr. SKEEN. Thank you, Mr. Chairman.

And, Madam Secretary, it's been a very enlightening meeting today, as it always is.

Secretary O'LEARY. Thank you, sir.

REDUCTIONS IN FY 1996 FUNDING

Mr. SKEEN. I appreciate it. I appreciate the opportunity, too, to comment on this business of budgetary reductions, and so forth, and I don't think you can do this in a single-phase operation, us over here cutting without any interface with these various agencies and departments. It just doesn't make good sense. So I think your idea is a good one and I would certainly endorse it.

Secretary O'LEARY. Thank you, sir. I've enjoyed the collaboration in the two years that I've been on the job and I look forward to it for another two years.

Mr. SKEEN. As far as doing away with Energy, I cannot imagine anybody that knows anything about how dependent, energy-dependent we are in this Nation of ours not having an entity that's devoted entirely to the kind of problems that you deal with every day. It just doesn't make sense.

However, one of the big criticisms is that we've never really developed a cogent national energy policy, and I think those of us in the Congress go back and pound on this all the time because we're so diverse in our energy production. And, also, we need the research and we leave it open-ended so that we can go somewhere with it.

But let me just ask you one specific question. We've had the big brouhaha over the monitored retrievable storage, and we have an Indian tribe that has re-voted it at the same time. It's a whole new political phase. If you lose an election, just have them re-vote it.

NUCLEAR ENERGY INDUSTRY RELATIONSHIPS

Does the Department still have an interest in oversight? The nuclear generators may have this great fund of money, which I think is the biggest target we've got in this whole process, because I think we're grabbing at it from the standpoint of how much economic flow we can get out of the situation. But they still can't move any of this thing unless the Department of Energy or the States, the various entities, cooperate. Is this not true?

Secretary O'LEARY. Well, the Department of Energy, as the laws are currently crafted, has no responsibility and no authority to step into what essentially is disagreement among private parties contracting. However, States have authority and so will the NRC in terms of licensing that facility.

Mr. SKEEN. Correct.

Secretary O'LEARY. Of course, I'll probably get in a little trouble, but in my——

Mr. SKEEN. Well, we'll both be in trouble with this.

Secretary O'LEARY. Fine. Well, let's go down together. In my opinion, what needs to happen is that the Secretary of Energy needs the authority to develop an interim facility, and I very much look forward to the debate in the Congress as we move to give the Secretary of Energy that authority.

Mr. SKEEN. Well, the private sector on its own does not have the ability to begin moving this stuff around without somebody looking into it, or somebody at least having some authority about whether or not they can provide an interest through a sovereign entity or something like that, such as another State.

Secretary O'LEARY. Absolutely.

Mr. SKEEN. Transportation and things of that kind. So all this brouhaha that we're going through is absolutely moot.

Secretary O'LEARY. It's going to be a long year, I suspect.

Mr. SKEEN. Yes, Ma'am, it has been. It's been a long year coming up. That's right, it will be a long year going, too. [Laughter.]

Well, thank you very much.

Secretary O'LEARY. Thank you, sir.

Mr. SKEEN. It's always very well done.

Mr. REGULA. Would you like another?

Mr. NETHERCUTT. Yes, Mr. Chairman, just a couple of questions or comments.

NATIONAL ENERGY POLICY

I'm struck by Mr. Skeen's comment about a national policy, a national energy policy, and I'm wondering, what part of that policy, assuming we have a policy, a national policy that you would be able to articulate, what role does nuclear energy play in it, in your opinion? And, as a policy decisionmaker, should it play a role in our future development and future independence, and so on, those words that I think we all tend to embrace as far as a policy for the United States? Could you comment on what role you see for nuclear energy development or whether we have one or not?

Secretary O'LEARY. I can and I will. I want to start by saying that I'm clear that an energy policy exists. DOE can be found in the acronyms of more pieces of legislation than I can now recite simply from memory, but I can tell you that I was around when lots of it was written and I participated in helping a lot of it be written. I will come back to that if there's time because I need to comment on oil and gas. I think the issue is, quite frankly, that some of us don't like the price. The Congress has not seen fit to tamper with that since 1980 or 1981. I was there when all of those things happened as well.

ROLE OF NUCLEAR ENERGY

Now to nuclear energy, both in law and a philosophy that is personal to me, I believe that it is important to keep all of our options, both supply and demand, open and as viable as possible. We start from that premise and then we ask ourselves, as Mr. Skeen just has, what happens in the real world where real people live? And so now one moves outside of Washington and one begins to look in the States and at the utilities that generate electricity. And what you and I know is that over the time the share of capacity supplied by nuclear energy for the United States of America has been on a slow, but a downward course, and that has been occasioned by several facts. It could have been much more dramatic, but over this time capacity in these nuclear generators has increased, which tells me several things. We're operating better and the technology has helped us to raise the capacity factor. That's good news.

But, at the same time, nuclear power plants are closing—in the past 12 months, several—well ahead of schedule, and new power plants have not been built. As a matter of policy, directed by the Congress of the United States, the Department of Energy continues to invest with the private sector, with the utility industry, in the development of advanced light water reactors. I called them the reactors for the next generation of building.

The question now goes back to the States and State regulators and citizens in States and also to boards of directors to ask the question: is anyone financing or proposing to finance nuclear generators in the United States? We all know the answer to that question: no.

But we also know, as we look at the statistics for the rest of the globe and we focus on Europe, Eastern Europe especially, and we focus on Asia, that there are plans afoot to add capacity and nuclear power. In my mind, just as I believe it's important to be there for coal and the building of clean coal technology facilities, I believe it's also important for the United States to be there for the building of these nuclear reactors for several reasons.

One, I want the industry to survive so that the public can make its choice in the next 10 to 15 years, and, most importantly, I would like to see cleaner, safer, better-managed U.S. equipment in sites where the alternative might be for reactors that are looking more like those from Chernobyl or some modest step-up from Chernobyl. So I believe we have a moral obligation to continue to seek these markets outside of the United States, so that we can keep a viable industry and allow the U.S. public to make its own determination with respect to diversity, the diversity that they desire. The public policy says I need to keep all of those options open, and I hope this committee will, as it looks forward in its other arenas to participating in this debate, that I keep, I'm allowed to keep that option open.

Mr. NETHERCUTT. That's all I have. Thank you, Mr. Chairman. Thank you.

NATURAL GAS VEHICLES

Mr. REGULA. I came into Baltimore and I just noticed all the buses making a loop had a little decal that said they were natural gas engines and were making a cleaner environment. It's very obvious many of our cities are faced with that. How can we encourage a greater use of natural gas vehicles as part of responding to the clean air requirements?

Secretary O'LEARY. You have it within your authority, Mr. Chairman and members of this committee, to permit the Government, through a very modest program, to continue working with cities very much like Baltimore. Baltimore happens to be a Clean City. What does that mean? That means that the city of Baltimore and its private and public citizens have decided that they want an opportunity to move to alternative-fuel vehicles to improve the air quality there.

What we do in the Department of Energy is we make several decisions. One, we will place Government-owned alternative-fuel vehicles in Baltimore and in that county area, so as to pull the market for the infrastructure, the service stations, if you will—I'm not supposed to use that word—that service these alternative-fuel vehicles. If this budget is cut in that area, the opportunity to expand the marketplace for these vehicles is lost. If the budget is cut in the areas that permit us to purchase alternative-fuel vehicles for the Federal fleet, which responsibility the Department of Energy leads, at least in setting policy and in assisting the General Services Administration, then we can't live up to our commitments to now some approximately 30 cities and counties who have decided that they would like to help us drive in more efficient and healthier cars. So that's a way we can continue this.

Mr. REGULA. Well, let's take Baltimore.

Secretary O'LEARY. Yes, sir.

Mr. REGULA. What do they do? What does the city do, and what do you do to make fueling facilities available?

Secretary O'LEARY. What the city of Baltimore commits to do is to establish, through its own infrastructure, a facility. That would be number one.

Mr. REGULA. A fueling facility.

Secretary O'LEARY. A fueling facility. What happens, in addition, is the city of Baltimore, through its planning capability brings in the public and private sector who all have interests—sometimes it's financial; sometimes it's philosophical—in seeing the growth of these alternative-fuel vehicles. They set up the infrastructure which—and I'm sorry I cannot specifically say Baltimore, but I can say for every city I've been in—and I've been to a number of these cities—what that infrastructure involves. It involves normally a vendor who is converting automobiles. It normally involves a cab company who is using an alternative-fuel vehicle.

In other words, we're getting the mass of people who have vehicles and who are interested in expanding that vehicle market organized. They set targets for the numbers of service stations and the numbers of cars over time that they will acquire. What the Department now does is provide the technical base to permit the city and its partners—and I'm thinking now of Sacramento, where there are 118 partners involved, providing both the details of maintenance, management, and tracking the experience of using those cars, so that we can show that they're more efficient and more economic.

Mr. REGULA. But do you subsidize any part of that scenario?

Secretary O'LEARY. What we provide is the facility in Golden, Colorado that now permits us to track the experience with these automobiles.

Mr. REGULA. Okay. All right.

Secretary O'LEARY. And what we also provide is the capability to move Government equipment into those areas. So this is a support; it's not a subsidy.

Mr. REGULA. But where your subsidy would come into play is in the Government vehicles?

Secretary O'LEARY. We deliver our vehicles—we're going to buy those vehicles anyway. Now what we do is we pay the delta, the additional cost to convert those automobiles and drive the industry, so that over time we bring down that cost and there's no premium.

Mr. REGULA. But if the President were to issue an Executive Order to either GSA or the Postal Service, or whatever, to have a certain number of natural gas-fueled vehicles, would not they pick it up under their own budget?

Secretary O'LEARY. They have to be paid for.

Mr. REGULA. Why?

Secretary O'LEARY. Often they're paid for by the General Services Administration, the Department of Energy, or the Department of Defense. But all of these funds are being used. What we have done is we have spread this responsibility across the agencies that have the capability to move the automobile.

Mr. REGULA. But they're all taxpayer dollars——

Secretary O'LEARY. They are, indeed.

Mr. REGULA [continuing]. Whether it comes from DOE——

Secretary O'LEARY. Yes.

Mr. REGULA [continuing]. Or whether it comes from Defense?

Secretary O'LEARY. That's correct, yes.

Mr. REGULA. And it would seem to me that the President, if he were committed, could just simply say to agencies, "You shall do this."

Secretary O'LEARY. But we still need funds to be able to do that——

Mr. REGULA. Well——

Secretary O'LEARY [continuing]. And there is an existing Executive Order, and that does not do away with the necessity to have the Department of Energy with its expertise in the use of these cars, and its capability to monitor their performance, to work with both GSA and the Department of Defense, and with our colleagues in the Federal regions. So when we are in Baltimore, we are working with all Federal agencies in Baltimore, some of whom are very reluctant to move into these alternative-fueled vehicles. An Executive Order works very well at the top—you should forgive me for being so blunt—but where people get the work done, they need to have an experience to have them understand that not only will they be following directives, but they will have automobiles that are reliable and as equally inexpensive to run, and those are the details on which we spend our time.

STRATEGIC PETROLEUM RESERVE

Mr. REGULA. SPRO——

Secretary O'LEARY. Yes, sir.

Mr. REGULA [continuing]. As I understand it, to do the improvements on SPRO that are required, you contemplate selling $100 million worth of oil?

Secretary O'LEARY. One time only; that's correct.

Mr. REGULA. One time only. What if you were not able to sell that oil or did not? Where's the $100 million going to come from?

Secretary O'LEARY. It must come out of the existing Department of Energy budget, which would mean that some other initiative, some mission, would have to be reduced to permit that to take place.

Mr. REGULA. Are you concerned about leakage of SPRO oil into the aquifers? I know that there's been some evidence of that thus far.

Secretary O'LEARY. The facility and the system, which is now 20 years old, in my opinion, has not received the prudent management and care that it deserves. Once again, a Government standard says you go in and spend as little money as possible and you do very little to improve and to keep pace with infrastructure. I think we've seen the benefits, the bitter fruit of that policy, in the work that we've had to do over the past two years, both in the hot and gassy oil, as well as our problems at the Weeks Island facility.

What I would hope as we go forward is that we will do a much better job of planning for infrastructure improvements as we go along, and never will I have to be before you again asking for the sums of money that I have asked for in the past two budgets to improve infrastructure. But I might tell you that this is the case with many of our facilities. It certainly is the case at our national laboratories, where we have ignored infrastructure because we've had to make, as institutions, judgments about programs versus facilities, which is not a thing you would do in the private sector.

Mr. REGULA. Are you going forward in your planning to sell $100 million worth of oil?

Secretary O'LEARY. Unless this Congress tells me to do otherwise, and I must point out to you why. I'm well aware of the average cost of acquisition for the petroleum in the Strategic Petroleum Reserve, all 595 million barrels. Its average cost is about $27. However, the last two or three years our acquisition cost is below market price today. And I——

Mr. REGULA. Excuse me. When you say $27, does that include infrastructure allocated per gallon—or per barrel—or was this just the pure cost of the oil itself?

Secretary O'LEARY. It includes all costs, but——

Mr. REGULA. Okay.

Secretary O'LEARY [continuing]. I want to be clear for the record as well that the cost for storage of these barrels equates to about 40 cents per barrel per year and the infrastructure cost in the United States has been much below that of our international energy agency partners because we chose to go underground as opposed to building above-ground storage. So we've still got the best bang for the buck among all of our International Energy Agency partners.

Having said that, I'd like to focus on the last two to two and a half years where the acquisition costs for that oil, including the infrastructure cost and the storage cost, is still below market today. I recognize that this is an extraordinary request, but these are also extraordinary times, and I believe we need to get on with solving the Weeks Island problem. I also want to leave you with a clear impression that we're beginning to stabilize the facility even as we talk, because it's very important in my mind to do that. The environmental issue you raised in your original question is one that I'm well aware of and we are addressing.

Mr. REGULA. Does it not require authorizing language to sell the $100 million——

Secretary O'LEARY. Yes, it does, and——

Mr. REGULA [continuing]. Worth of oil?

Secretary O'LEARY. Our Assistant Secretary, Patricia Godley, is very busily making her calls to address those issues with the appropriate committees. We are aware of the work we have to do in order to accomplish this. I believe it's important to do it.

NAVAL PETROLEUM RESERVES

Mr. REGULA. NPR, I believe that in the proposed budget it's underfunded, on the assumption that there will be a corporation which is established offbudget. What's the status of that?

Secretary O'LEARY. Again, Mrs. Godley has her work cut out for her. She's also making those visits as well, and I'm——

Mr. REGULA. She'll be leaving in a hurry here to get going. [Laughter.]

Secretary O'LEARY. If you'll let us, Mr. Chairman, but only when you're ready.

I am—it's unfortunate that one would use the language "underfunded," and I recognize the implication of what we've done. It presumes that the best business practices will pertain, will be allowed to corporatize in which case the money requested is adequate against the circumstance that that does not happen. Then we will be, again, looking at what is available to accomplish this goal.

Mr. REGULA. Well, if the law requires you to operate NPR at the maximum efficient rate, does your budget that's proposed allow you to respond to that requirement?

Secretary O'LEARY. It does not. The budget as presented presumes that we will be successful with the corporatization model. If that does not occur, then we will have to adjust the budget to so reflect. I'm well aware of that fact.

Mr. REGULA. Would the corporatization reduce the pressure to sell the NPR?

Secretary O'LEARY. It certainly could have that effect. It depends upon the philosophy that drives this decision. If the philosophy is the one we're applying during this session of Congress, and likely will apply for years, is one that asks the question, "Is this a valid Government initiative and mission". Then, I would presume that the controversy notwithstanding—and there's controversy over every proposal raised—then we'll be successful at moving this operation into private hands. I certainly understand it's controversial. There's nothing here that we have recommended, nor suggested, that is not without its controversy. As I discussed with Mr. Skeen earlier, I'm clear in this job that about 50 percent of the people are going to be unhappy with me all the time, and that's on a good day.

Mr. REGULA. Well, we share that with you.

Mr. SKEEN. That's a pretty good percentage. [Laughter.]

Mr. REGULA. GAO made three specific recommendations with respect to enhancing the profitability of the NPR. They were: one, eliminate the requirement that the reserves be produced at the MER; two, finalize the distribution of the equity shares to allow greater investment in projects that would enhance the profits of the operation as a whole; and, three, include a nonconsent clause in the contract between DOE and Chevron to promote risk-sharing that could help encourage investments that enhance profits.

What is your reaction to these recommendations?

Secretary O'LEARY. We agree with all three, and one and two will be subsumed in the legislation that we've proposed with respect to the nonconsent language. We were far apart on writing a new contract with Chevron which would have adopted language very similar to this. Once we understood that we might be moving to a more corporate-like model—well, no, I'm sorry. Once we took pressure from having entered into what appeared to be a sole-source contract with Chevron, we decided that we should open up the opportunity for competition. Just about the time we did that, it was clear we needed to move to the corporatization model. So this issue continues to dangle, and we will pick it up as we move forward.

And maybe you've picked it up in your extension of the contract now with Bechtel [speaking to a member of her staff]? No? So we have yet to work on that, but I understand it needs working on and now I'm sure Mrs. Godley does as well.

ENERGY CONSERVATION

Mr. REGULA. The energy conservation and Federal energy management programs, they've, I think, probably been successful. Why would not the marketplace take over these conservation activities, given the prices of energy?

Secretary O'LEARY. Well, two reasons: you have to make an investment in order to recognize a wonderful opportunity to have either a third party contractor or to have a utility give a rebate for conservation planned for and implemented, but the Government, too, must pay its fair share to begin with.

FEDERAL ENERGY MANAGEMENT PROGRAM

Mr. REGULA. For Federal buildings?

Secretary O'LEARY. For Federal Buildings. Nobody's going to walk up, roll up to the DOE and say, "My goodness, this looks like this wonderful opportunity. We're going to retrofit for you and you have to make no investment." You have to make your initial investment.

I would tell you, however, that every year we are investing this money we're getting about an 8-to-1 payoff over the long term, and I cite as an example the $1.3 million we received, symbolic albeit, from PEPCO last year on the occasion of installing new ballast and lighting in our facilities. And what we've predicted—and someone must correct me if I'm wrong—we could save the taxpayers—is it $8 billion, I want to say [speaking to a member of her staff]. I think the number is $8 billion over the life of all projects started in the next four years, and if that figure is incorrect, I will correct it in the record, but I'm pretty sure—it's a very modest Federal expenditure for great returns which go directly to the American taxpayer, and we avoid paying utility bills. It's a great bang for the buck.

Mr. REGULA. Well, wouldn't the agencies take that initiative since they, I assume, pay their own fuel bills out of their budget?

Secretary O'LEARY. They do, indeed, and the work that we do in this budget is to advise other Federal agencies who don't have their energy experts, again, to move this epic along. I would very quickly tell you that I left Government some 12 years ago—and there was the Federal energy management program. I came back and said, "What the heck is this program still doing here? Didn't they get this work done?" The answer was no because there was no Executive Order to the agencies to go on and make the modest expenditure to the wonderful group of people at the Department Energy tilting windmills at departments who, like many of us, don't want to make the initial investment to save the money long term.

We've got an Executive Order in place. We continue to work with our agencies to advise them on how best to get this work done, and that's what we're about, but it's a great savings to the American taxpayer each time a Federal facility, like the one at Federal Square, New York, or the one in Oakland, and hundreds of others, begin to make this modest investment to return great savings to the taxpayer.

Mr. REGULA. Let's look in a crystal ball. Mr. Skeen asked you about energy policy.

Secretary O'LEARY. Yes, sir.

ENERGY PROJECTIONS

Mr. REGULA. We're now importing over 50 percent of our petroleum needs, if I'm correct. Looking down the road, what do you envision the situation in the United States in terms of our dependency, in terms of developing alternative fuels. You know, people back home—and I'm sure my colleagues experience the same thing—they say, well, why don't we just go to wind and geothermal and sun, so we don't have to worry about coal and emissions and petroleum with the foreign policy implications?" Just take us on a little tour of what you see down the road in terms of meeting energy needs, recognizing that we're hopefully, in an expanding economic society.

The other day Alan Greenspan, the Chairman of the Federal Reserve, said to the Budget Committee that if we get—and maybe you were there, Mr. Nethercutt—if we get the budget deficit under control, that we could look forward to, am I correct, expanded economic activity?

Mr. NETHERCUTT. That's what I read. I wasn't there, but that's my——

Mr. REGULA. It's in his statement. And that means more energy. We see more and more automobiles on the highways.

With respect to energy policy how do you respond to what lies ahead and maybe some of what we should be doing to prepare for that?

Secretary O'LEARY. What lies ahead is a tremendous requirement to steady on in terms of developing each one of these sources of energy, including wind, which is now very cost-effective at the bus bar, which is why you're seeing it planned for and being deployed in sections of the United States who have been traditionally not seen to embrace energy to the soft path, which now is to the hard path because the economics are right.

I see, and I understand from projections not merely done by our own people, but done by the international energy agency, an expansion of the requirement for energy, dramatically so, in terms of oil and gas and everything else we can deliver.

Mr. REGULA. Expansion?

Secretary O'LEARY. Expansion of the requirement as the globe becomes more technical. I mean, that's what China and India are all about, getting to that market, but also getting to that market in a clean and sustainable and economically-viable way. It puts a high premium on energy efficiency and on work for which there is likely not to be much sentiment in this Congress.

The work with the automotive industry and the fuel cell is important to the 21st century. Fusion, which people are likely to want to defund, is important to the 21st century. And where we saw dramatic shaving down of energy consumption per capita with economic growth when energy prices were very high in the eighties, and its impact through the late eighties, as we have settled down now to understand that the real price of energy is reduced dramatically, over 50 percent since the eighties, we have tended to relax and we need to continue to use this technology that I'm discussing and these programs that we know work to continue to shave down that use per capita of energy while at the same time we work as fast as we can to develop more oil fields and to bring everything possible home.

People pretend we're going to step away from coal. We are not going to step away from coal. So we'd better get it as clean as possible and we'd better continue to work on the generation and the use of turbines and other hard workers for large manufacturing centers, and we need to do this also to keep our own industries competitive.

I would cite, for example, pulp and paper, where we now see our competitors coming from much warmer climates whose trees grow a lot faster than ours. So we'd better be using technology to get at energy costs. The same would be true for a refinery segment. The environmental requirements on the refining industry for the next 10 years are going to cost more than the value of the asset. We need to use our technology to drive down those costs, so that we can continue to refine here in the United States.

It's interesting because someone months ago said, "I'm trying to save the Department of Energy because I want my job." Trust me, I've had easier jobs. I'm trying to hang onto the functions of the Department of Energy because some of us need to be thinking about the 21st century.

Mr. REGULA. What should this committee specifically be doing to get prepared keeping in mind that we're not an authorizing committee?

Mr. SKEEN. We can wag the dog once in a while.

ANNUAL ENERGY OUTLOOK

Secretary O'LEARY. I think the dog needs to be wagged to understand. I'm going to begin my next testimony with the annual energy outlook that focuses on requirements in the United States, but the more dramatic piece, which I tend to give to international audiences, needs to focus on what the world requires in terms of its growth for energy. The technology's going to pay off in the long run, but we've also got to hold the line in the short line. The things that have been most successful in the Department of Energy are the partnerships with the private sector and the voluntary programs where we're not telling people what to do; we're giving them the incentives to go after what seems to work in their locality, and that's where we need to be. If somebody can do this in the Department or ERDA, or whatever they're about to create, then God bless them, but somebody had better stay focused on this issue, in my opinion.

Mr. REGULA. Do we have the highest energy per capita consumption of any country in the world?

Secretary O'LEARY. Yes, we do, but we are dramatically driving it down, and we're doing, as I pointed out, we're doing an excellent job of that before the real price of energy got so low.

I'm not ashamed of where we are. The people who are ahead of us have built new infrastructures since World War II. You look to Scandinavia. You look to the Fins. They've traditionally done a better job, but we've had more success on our technology, where we've had to take existing infrastructure and retrofit.

Mr. REGULA. Jump in here, Mr. Skeen.

Mr. SKEEN. All right. I think you're going in the right direction. Madam Secretary, you put your fingers on exactly the point: we're the greatest energy users, but we're also the most efficient users, or becoming the most. But it's our technology that drives it, and even Newt himself stands up there and tells us about the vacuum tubes that are made and we're still directing traffic with vacuum tube equipment on FAA while we've got a miniaturized cellular-type energy cell that can do this job. The Government's way behind, in some cases, way behind the curve on efficiency. You're driving that efficiency, your Department.

Secretary O'LEARY. And the interesting thing is that when I came to the job, we talked about energy efficiency for energy efficiency's sake, and it really is about being competitive and surviving in the 21st century. That's what it's all about.

Mr. SKEEN. That's what it's all about.

Secretary O'LEARY. This is about survival.

Mr. SKEEN. Thank you, Mr. Chairman. I'm going to have to leave.

You've done a great job. Thank you, Madam Secretary.

Secretary O'LEARY. Thank you, sir.

Mr. REGULA. We're going to have to adjourn——

ENERGY RESEARCH

Mr. NETHERCUTT. One quick question: $2.8 billion it looks like of your budget request goes for science and technology. Are you satisfied with that amount? Is that your pure research that you speak of, public/private?

Secretary O'LEARY. That's correct, and most of that is in the basic research, not the research that gets delivered to the marketplace, say, in three to four years. That's—those are fusion programs.

Mr. NETHERCUTT. Right.

Secretary O'LEARY. Those are our accelerators. Our accelerators and the work that we're doing in many of our laboratories, like Fermi, some at Argonne, at our CEBAF facility at Brookhaven, that invite participants from universities, as well as industry. Those are cost-shared initiatives, but our fusion energy program, which is in Tokamaks, which I believe is under great stress, is a part of that budget, as is the entire high-energy physics budget.

It's very interesting; we talked about finally being able to declare that we had discovered the top quaff, and all of my high-energy physicists are all atwitter and I'm saying to my scientists, "Well, please tell me how I can explain to my grandmother what this means." And she says, "Well, it means we've found the last subatomic particle," and I said, "Hurrah! Now tell me what that means." [Laughter.]

And my scientist, my chief scientist—Dr. Krebs is not here today—looked at me and she said, "The only thing I can tell you is that the last time these kinds of discoveries were made, we discovered protons and neutrons," and that has driven us into the 20th century with marvels that one could not have thought of from the automobile to the microphones we use. I cannot tell you what this means, but I can tell you that these are the building blocks of all matter, and likely in another 10 years this will make a difference in terms of our energy technology and it is likely to make a difference in terms of the quality of our health. That's the difficulty in explaining to a public why we must continue these investments.

PARTNERSHIPS WITH DEPARTMENT OF ENERGY

Mr. NETHERCUTT. Would you agree that those who are the private part of the public/private partnership are satisfied with their relationship with the Department of Energy as it exists, the structure that exists today?

Secretary O'LEARY. I think they're more satisfied than they were on January the 23rd, 1993, and I think we can make them twitter with delight. We haven't done that yet.

But the part of the budget that I am—I'm concerned equally about both parts of it, and the partnership with industry on the high-risk but nearly near-term technology, we cannot afford to lose because that's were the MIDIs in Japan are going to take the edge from us; the French will take the edge from us, if we back away from these partnerships.

It's not very fashionable to mention Les Aspin, but let me——

Mr. NETHERCUTT. Sure.

Secretary O'LEARY [continuing]. Because a year ago he was talking about the five dangers as we looked at national security in the post–Cold War era. One of them he described as the economic security of the United States of America. I have come to understand that more in this job, as I have moved out internationally and see the investments of our competitors and also see that those governments show up in marketplaces locked arm in arm with their private sector and can beat our socks off, unless we start to do the same thing.

Mr. REGULA. Mr. Nethercutt, I think you might be interested in this. The "Energy Messenger" has a story, "O'Leary Unveils New Energy Economic and Environmental Uses for Energy Department's Vast Lands and Facilities." Now the two that I thought you might be interested in would be, one, support for wild and scenic river designation for a 50-mile stretch of the Columbia River that runs through the former Hanford Nuclear Weapons Plant, and, two a salmon hatchery developed in water treatment pools once used to support plutonium production reactors at Hanford.

Secretary O'LEARY. At Hanford as well.

Mr. NETHERCUTT. Sure.

Secretary O'LEARY. Somebody wrote a positive article. [Laughter.]

Thank you, sir.

Mr. REGULA. Are you in agreement with all that?

Mr. NETHERCUTT. I think I would be. I'm not fully aware of those. I haven't seen that report, but that's good.

Secretary O'LEARY. The hatchery is a very exciting opportunity because it uses cooling waters to hatch the fingerlings, and then working through the President's "Invest America" is it called? We're using some of the Native Americans coming from nearby reservations to reclaim some of the streams, so that we are actually providing hatching fields for these—hatching streams for these fingerlings. But, more important, these youngsters are also working onsite, which opens up an opportunity for them to see other job possibilities in their future. So it's a win all around.

Mr. NETHERCUTT. It's an odd world, though, Mr. Chairman. You know, there would be those who say that that's not sufficient because it's not wild salmon. I mean, it's hatchery salmon.

Secretary O'LEARY. You've got it. We do what we can.

Mr. NETHERCUTT. Sure. I understand. Thank you very much.

Mr. REGULA. Now back to your plan here, I was curious about this one: creation of a park adjacent to the Department's Washington, D.C. headquarters and the Smithsonian Institution. Is there some land there that you're planning to use?

Secretary O'LEARY. There's the ugliest little strip of land between us and Transportation. As you look up the Mall, there's no place for anyone to sit or to just stop and have lunch, you know, the tourists who are moving between those two buildings. So one day I looked out and said. "My God, could we do something there for real people?" So for a very modest sum of money—as a matter of fact, we've gotten someone to donate the plans for putting some benches and flowers there—we just thought we'd like to make a difference. Now that you know, somebody will probably go find that $20,000, but it's a very ugly strip of land there and it does not, in my view, represent what the U.S. Government ought to offer to the taxpayers in town.

Mr. REGULA. Well, we'll help you, if we can, because I agree with you.

Secretary O'LEARY. Thank you.

Mr. REGULA. I had a little trouble getting D.C. to cut the weeds on the ramp that comes up off of 395 into—what?—C Street?

Secretary O'LEARY. The other thing we thought we'd like to do is erect a plaque and make that a memorial to our colleagues who lost their lives in that plane crash coming from our Pittsburgh Energy Technology——

Mr. REGULA. Oh, that's right, and one of those was from the 16th district——

Secretary O'LEARY. That's correct, yes.

Mr. REGULA [continuing]. Who worked for B&W.

Secretary O'LEARY. Yes. So we thought we'd do that.

Mr. REGULA. Great idea. We'll help you.

Secretary O'LEARY. Thank you, sir.

REALIGNMENT OF THE DEPARTMENT

Mr. REGULA. I'm interested—it sounds to me like you're trying to do an element of privatization such as the sale of the Pinellas Nuclear Weapons Plant that's listed, I see, in here along those lines.

Secretary O'LEARY. That's correct, and you need—I need to also share with you that, as a part of our downsizing, we're taking a hard look at assets that we own with the idea toward selling them. Recently, I've been made aware of the fact that we have lots of metal. Someone has told us that we may have something approaching a billion dollars worth of nickel, and so we've gotten a team of people together to look at all of our assets to see what's been lying around for the past 50 years that may be of value and ought to be sold. So when we come to the end of April, we'll be in a position to report on any number of these initiatives to try and find this money that I've now committed to—going to the bottom line.

Mr. REGULA. I think that's great. Get it into the marketplace.

Secretary O'LEARY. Yes, sir.

Mr. REGULA. I think government generally is a hoarder in that it buys things and they just lie around. There are other agencies we have that problem with.

PETROLEUM SUPPLY PROJECTION

Two questions. One is right now what you predict as the supply of petroleum in the United States in terms of our needs? Have we got 20, 30, 40 years, or can't you even put a number on it?

Secretary O'LEARY. You mean in terms of the number of years?

Mr. REGULA. Yes.

Secretary O'LEARY. Oh, yes, I'd put a number on it. It comes directly from our Energy Information Administration. As a matter of fact, where is Jay Hakes? The last time I looked, it was about 47 years? Twenty-three to 38? That's the band he's using now.

NATURAL GAS SUPPLY PROJECTION

Mr. REGULA. How about natural gas?

Secretary O'LEARY. Natural gas is 26 to 66 years. It's a very wide band. I, interestingly enough, Mr. Chairman, find myself not comfortable throwing these numbers around. I was here in the late seventies when we threw them around with great alarm. And maybe that's a bad thing for me to be doing. I'm always talking about the fact that I know for coal we've got another 200-plus years. People tend to believe that we're alarmists when we talk about our finite supplies in this way. But maybe I need to rethink that.

Mr. REGULA. Well, it probably stimulates conservation attitudes.

Secretary O'LEARY. Yes.

Mr. REGULA. So that has value.

Secretary O'LEARY. Yes.

Mr. REGULA. Doesn't Canada have enormous natural gas reserves?

Secretary O'LEARY. They do, indeed, yes.

Mr. REGULA. And, undoubtedly, those are available to our market and probably would be even more so if the price levels increased to some degree.

Secretary O'LEARY. The Canadians have been reliable trading partners. When I was in the private sector, the company for which I worked took from the Canadian, both in terms of hydro and natural gas, and I suspect are taking even more now.

The issue isn't so much what's available only in the United States, but what is available among reliable trading partners, and this is certainly the case with Venezuela and I would say Canada, and it's one of the reasons we've focused on working with the Russians because we see it clearly in the best interest of Russia and the United States to see those oil and gas fields producing at the world record levels which was how they used to be produced; natural gas, as an example. Gas Prom used to be the biggest producer in the world.

Mr. REGULA. Now we know Mexico has oil. Does Mexico have natural gas that could be pipelined into the United States?

Secretary O'LEARY. Mexico does have natural gas, and I'm embarrassed to tell you that I can't remember the share of it. At another point in my life I worked in that area as well, but they are valuable partners in trading, but they tend now to be taking more from us, but that may change over time.

Mr. REGULA. They're taking——

Secretary O'LEARY. More from the United States at this moment.

Mr. REGULA. In Mexico?

Secretary O'LEARY. Yes, that's correct.

TECHNOLOGY PARTNERSHIPS

Mr. REGULA. You mentioned MIDI and the partnerships that other countries have in the development of technology. Do you think we're doing an adequate job or do you think we should expand the role of Government in these partnerships to continue developing technology. And, of course, I recognize there's a cost factor here.

Secretary O'LEARY. There is, indeed. I've asked Dr. Dan Yergin, who's described in my testimony as a Nobel Prize Laureate author; I want to tell you he's a world class economist and was that before he ever wrote a book. I'm afraid we might lose that fact. I've asked him and any number of people from the private sector to help us take a hard look at what we're doing on that, the applied side. What I know of my own experiences in the last two years is watching the partnerships existing in France and in Great Britain to a large degree and certainly Japan, where the key industrial sectors, the strategic industrial sectors, receive the careful attention of government in a partnership that the United States has not, until Bill Clinton became President, thought might be a model to follow. So I think there needs to be more and closer planning.

And, interestingly enough, I've had this discussion with many Members of the Congress privately. How far that goes I can't be sure because we have to understand the comfort level in the United States, but I know when we're going to these newly-opened markets that government officials—China, Russia, the former Soviet States—once they start to deal with the private sector, they want to see their government counterpart. There is a level of comfort that can be addressed in helping to shape macroeconomic policy in support of energy development that the government has to bring to the table. I don't even want to get into the discussion on shared-tied aid and the kinds of incentives that the French, Italians, and the Germans are always offering ahead of us.

So in many instances what we have to offer is the better technology and maybe the longer-term experience because we've been in these countries as consultants. But unless we begin to pull a very strategic plan together, I'm afraid that our international competitors, who have their strategic plans so carefully woven between industry and government, will beat us out in these international markets.

NATIONAL ENERGY POLICY

Mr. REGULA. Do you think we have an adequate energy policy at this point that is definable?

Secretary O'LEARY. I think we have a definable energy policy. Where people have quarreled with it is because it does not now support the exploration and the finding of new oil and gas because the price is too low and the American public seems to like it that way.

Mr. REGULA. Well——

Secretary O'LEARY. And I think for the long-term our difficulty with respect to policy is our policy gets set in authorization over the long term, but the budget varies from year to year and we do not stay the course on our big ticket items. That means changing.

Mr. REGULA. One last question: take, for example, the use of natural gas engines. Do you think that we could use tax incentives as opposed to subsidies to accomplish some of these goals?

Secretary O'LEARY. Well, you have incentives; you have command and control; you have tax incentives. We all know that command and control leaves a lot to criticize it. You're left with incentives or you're left with, if you will, Government/private sector partnerships; I mean not, say, subsidiaries.

There's room for philosophical debate on both of these sides, but I think as we look—if we're going through a transition, we'd better make sure we don't drop pieces along the way, and that's the thing that I worry about over the long term.

Mr. REGULA. Thank you very much.

Secretary O'LEARY. Thank you, sir.

Mr. REGULA. I appreciate your time.

Secretary O'LEARY. I appreciate it.

Mr. REGULA. The committee's adjourned and this completes the hearing for today. We'll hold the record open for questions by members of the subcommittee.

[COMMITTEE NOTE.—Additional committee questions and answers for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Trip to China and India

Question: What were the major accomplishments from your recent trip to China and India?

Answer: Presidential Trade Missions provide a unique opportunity for our nation to demonstrate its commitment to U.S. companies, their technologies and products, and their employees. In both China and India, many U.S. companies lose projects because their bids are often unable to match those offered by our competitors, which are usually enhanced by financial incentives offered by their national government. While the U.S. has many programs, rules, and regulations on international project finance -- some of which support projects and others of which restrict U.S. involvement -- the U.S. Government in the past has not been as supportive of U.S. companies involved in international project development as we could have been. In China, this lack of U.S. Government support and direct involvement indicates to the Chinese a lack of interest by the U.S. Government in the success or failure of U.S. companies in the Chinese market. This approach disadvantages U.S. companies as they compete in the expanding markets found in Asia today.

Nevertheless, Chinese government representatives reiterated many times during the mission that they would prefer to do business with American companies, whose technologies are understood to be the most advanced and most reliable in the world. To do business in both China and India, one must be willing to commit to building a relationship, a lengthy process at best, and be able to work with the government officials at all levels. In countries such as China, where energy is supplied to citizens by State (and sometimes national) government-owned companies, the government plays important roles in shaping and selecting energy projects. Because government officials not only set policy but also approve each energy project, it is beneficial for U.S. government officials to work with Chinese government officials. Chinese government officials clearly desire to work with U.S. government officials in developing policies that will enhance the ability of U.S. firms to compete in developing power projects and selling U.S. equipment and services.

On the China mission, we signed eight government-to-government agreements that will expand and institutionalize cooperation between China and the Department and contribute to relationship-building between our two governments in the areas of energy efficiency and renewable energy, coal bed methane recovery and utilization, regional climate research, policy development and exchange, and research reactor fuel conversion. Similarly, on the India Mission, we signed six government-to-government agreements in the areas of energy efficiency and renewable energy, fossil energy, the environment, and electric policy development. Establishing and expanding our government to government relationship while simultaneously demonstrating our Government's commitment to American businesses helps foster individual business relationships with Chinese and Indian partners.

Our missions attempt to demonstrate the depth and diversity of U.S. experience and technical expertise in the energy business. We work to strengthen our relationships with each country and work together to establish the political, financial, and regulatory atmosphere necessary for commercial linkage to flourish. Progress in creating these conditions are just as important, if not more important, than the magnitude of project agreements that our Mission initiated. To date, these Trade Missions have resulted in an estimated $27.7 billion of business agreements. The breakout by Mission (see more detailed attachment) is as follows:

India:

Secretary O'Leary 7/94 visit and follow-up =$5.2 billion
Visits by Indian Ministers Salve and Kumar = 1.8 billion
Secretary Brown's Mission (energy component) = 1.5 billion
Secretary O'Leary's Return in February 1995 = 1.4 billion

Total India Energy $9.9 billion

Pakistan:

Secretary O'Leary 9/94 Mission and follow-up =$3.9 billion
Deputy Secretary White's December 1994 visit = 2.1 billion

Total Pakistan Energy $6.0 billion

China:

Secretary Brown Mission (energy component) =$5.3 billion
Secretary O'Leary February 1995 Mission = 6.5 billion

Total China Energy $11.8 billion

TOTAL ENERGY RESULTS = $27.7 billion

SUMMARY OF TOTAL SIGNED BUSINESS AGREEMENTS

BY ENERGY SECTOR AND TRADE MISSION

DEPARTMENT OF ENERGY TRADE MISSIONS
TOTAL BUSINESS AGREEMENTS SIGNED
BY
ENERGY SECTOR & TRADE MISSION

($ MILLION)

MISSION	RENEWABLES	EFFICIENCY	OIL & GAS	COAL	POWER	TOTAL
INDIA 1	$202.3M			$100.0M	$4870.0M	$5172.3M
INDIA 2	$1274.3M	$50.0M				$1324.3M
PAKISTAN 1	$200.0M	$8.0M	$275.0M		$3454.0M	$3937.0M
PAKISTAN 2	$425.0M	$.4M	$136.8M		$2018.0M	$2580.2M
CHINA	$630.5M	$428.8M	$31.5M	$1750.0M	$3669.0M	$6529.79
TOTAL	$2,732.10	$487.20	$443.30	$1,850.00	$14,011.00	$19,543.59

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE

TO INDIA

JULY 7-15, 1994

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE TO INDIA

July 7-15, 1994

BUSINESS AGREEMENTS SIGNED BY POD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		RENEWABLES POD	
Baharat Electronics	Spire Corporation (MA)	Sale of PV manufacturing equipment for Indian production	$2.0M
Pentafour Solec Technology, Ltd.	Solec International, Inc. (CA)	Sale of PV cells for module assembly in India	$6.5M
Bangor Group	Cannon Power Corp (CA)	Opening of Cannon office in India & signing agreement on 25 MW wind farm	$75.0M
ESVIN TECH	MTCI (MD)	Licensing US gasification technologies for Indian waste to energy market	TBD
Bhoruka	SRC International (PA)	Efficiency & demand side management contract for Bombay textile firms	$3.8M
Emgee Solar	Martin Marietta (CO)	Develop PV systems and begin joint venture manufacturing	$66.0M
Siemens India	Siemens Solar Industries (CA)	Assemble & sell solar lanterns with components manufactured in US	$40.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Tata Energy Research Institute	Lockheed Environmental Services (TX), Econergy Int'l, Duke Engineering & Services, Environmental Defense Fund, TransAlta Utilities, Niagara Mohawk Power	Develop a bagasse-fired cogeneration facility at 4 Indian sugar mills as joint implementation pilot project	$TBD
Delton Cable	Ovonic Battery Company (OH)	Sale of production equipment and license for Indian production of advanced batteries	$9.0M
		SUBTOTAL	**$202.30**
ELECTRICITY POD			
Dabhol Power Company	Enron, GE, Bechtel		$2100.0M
No Indian partners	AES, Raytheon, Foster Wheeler, GE		$650.0M
	Spectrum Power Generation, Ltd (NY)	Power Purchase agreement	$245.0M
Ajinkyatara Cooperative Sugar Factory	ThermoChem, Inc		$400.0M
Thermax Ltd.	Proven Alternatives (CA)		$400.0M
Raunaq Group	Cogentrix		$275.0M
Raunaq Group	US Environment Systems		$600.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
	CMS Generation Company (MI)		$200.0M
		SUBTOTAL	**$4,870.00**
COAL POD			
Jaya Foods, Spectrum Washeries	Spectrum Technologies (NY), Elgin Industries (IL)	Consortia agreement to demonstrate coal washing technology	$100.0M
		SUBTOTAL	**$100.0M**
		TOTAL	**$5,172.30**

RETURN JOURNEY TO INDIA

FEBRUARY 11-14, 1995

RETURN JOURNEY TO INDIA

February 11-14, 1995

BUSINESS AGREEMENTS SIGNED BY POD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
Swasti Power Engineering Ltd.	Acres International Corporation (NY)	Memorandum of Understanding to form a joint venture for developing a series of small hydro projects in Uttar Pradesh state	$40.0M
KEI Energy, Ltd., Indian Renewable Energy Development Agency	Bechtel Corporation (CA)	Memorandum of Understanding to establish joint venture to create a facility to accelerate commercial use of renewable energy technologies in India	TBD
Madhya Pradesh State Electricity Board	Dodson-Lindblom International, Inc. (OH)	Memorandum of Understanding to develop 5 small hydro projects (5.1 MW total) in the Madhya Pradesh state, through DLI's Indian subsidiary (Ascent Hydro Projects Ltd.)	$9.0M
Financial Assistance Agreement with OPIC (no Indian partner)	Dodson-Lindblom International (OH) /Overseas Private Investment Corp. (D.C.)	Provide funding of pre-investment analysis for developing 5 small hydro projects in Madhya Pradesh state.	$.100

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Bharat Heavy Electricals Ltd.	Donaldson Company, Inc. (MN)	Commercial sales agreement for DI Filter Systems (joint venture of Donaldson and Munradtech of India) to manufacture air filtration modules for gas turbines, in Haryana state	$.115
Mokul International Private Ltd.	EHF Corporation (PA)	Memorandum of Understanding to form a joint venture for developing an integrated energy production/community development project involving a solar thermal energy, a coal-preparation facility, and a fluidized bed coal combustion power generating unit.	$750.0M
Ministry of Nonconventional Energy Sources	Electric Power Research Institute (EPRI) (CA)	Memorandum of Understanding to establish a partnership for evaluating renewable energy sources in India (i.e., wind, photovoltaics, and biomass)	N/A
Bombay Suburban Electric Supply Ltd.	EPRI (CA)	Memorandum of Understanding to establish partnership to evaluate EPRI electricity transmission/distribution technologies in India	TBD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Larson & Toubro Ltd. - Sargent & Lundy, Ltd.	EPRI (CA)	Memorandum of Understanding to establish joint venture partnership for marketing and technology support for "State of the Art Power Plant" computer model and related products jointly developed by EPRI and Sargent & Lundy through their **SEPRIL** jointly-owned subsidiary.	TBD
Renewable Energy Systems Ltd.	EPRI (CA)	Memorandum of Understanding to establish a partnership for design, installation and evaluation of a 2 MW photovoltaic power project	N/A
Thermax Ltd.	EPRI (CA)	Memorandum of Understanding to establish a partnership for development of electricity-utlizing applications such as water purification, medical waste sterilization, and food processing	N/A
Indian Renewable Energy Development Agency	EPRI (CA)	Memorandum of Understanding to establish a partnership for evaluation and technology transfer in the area of renewable energy.	N/A
Solaris Systems Ltd.	Intech Global Resources Inc (TX)	Memorandum of Understanding to develop a 2-MW photovoltaic energy power plant in Kerala state	$10.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Udhaya Semiconductors Pvt. Ltd.	Intech Global Resources, Inc. (TX)	Memorandum of Understanding to develop inverters and allied hardware for grid interaction of non-renewable energy schemes with the conventional grid	TBD
Energy Management Centre of GOI Ministry of Power	J. Makowski Company (MA) Apollo Hospital Group	Memorandum of Understanding to develop a 200-MW combined fossil energy/renewable energy power generating facility with energy efficiency center, in Delhi state	$300.0M
ABAN Lloyd Chiles Offshore Ltd.	Kenetech Windpower (CA)	Sales contract for delivery of 600 advanced wind turbines (equivalent to approx. 200 MW generating capacity).	$150.0M
Tata Energy Research Institute (TERI)/OPIC	Lockheed Environmental Systems and Technologies (TX)/Econergy International Corp (CO)	Partnership to develop two 50-MW bagasse-fueled cogeneration power plants, in Uttar Pradesh state.	$.100
NEPC Micon Ltd.	Omnion Power Engineering Company (WI)	Sales agreement to supply and install a 100 kilowatt grid-interactive photovoltaic power plant in Tamil Nadu state, at an existing wind power site	TBD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Pentafour Solec Technology, Ltd.	Zond International Development Corp. (CA)/Blue Chip Technologies	Memorandum of Understanding to establish a joint venture specializing in wind energy. The first project will be a 60 MW wind energy project in Tamil Nadu state.	$15.0M
		SUBTOTAL	**$1,274.315**
EFFICIENCY POD			
Energy Management Centre of the Ministry of Power	Oak Ridge National Laboratory (TN)	Memorandum of Understanding to promote scientific and technological cooperation betwen India and U.S. in area of energy efficiency	TBD
First Custodian Fund Ltd.	Oxford Consultants Int'l (MD)	Memorandum of Understanding to establish a joint venture (**First Oxford Technologies India Ltd**.) for the purpose of improving industrial and commercial energy efficiency in India	$50.0M
Energy Consultants Private Ltd.	TENSA Inc. (TX)	Memorandum of Understanding to establish a joint venture in India in areas of energy conservation, process integration, cogeneration, and renewable energy	N/A

INDIAN PARTNER	**US PARTNER**	**DESCRIPTION**	**TOTAL VALUE ($ Million)**
Thermax, Ltd.	Tennessee Valley Authority (TN)	Memorandum of Understanding to establish a joint venture to provide specialty welding services and technologies for the utility industry	TBD
		SUBTOTAL	**$50.0M**
		TOTAL	**$1324.315**

PRESIDENTIAL MISSION ON ENERGY INVESTMENT

TO PAKISTAN

SEPTEMBER 21-24, 1994

PRESIDENTIAL MISSION ON ENERGY INVESTMENT TO PAKISTAN

September 21-24, 1994

BUSINESS AGREEMENTS SIGNED BY POD

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
	Agrilectric Power (LA)	2X5 MW pilot project biomass from rice hulls	$10.0M
Power Gencorp Ltd.	Synergies Energy Developmemt Inc (MD)	75 MW hydropower at 3 sites	$150.0M
Power Gencorp Ltd.	ENTECH (TX)	Solar power projects	$40.0M
		SUBTOTAL	**$200.00M**
EFFICIENCY POD			
Greaves Cotton	Armstrong (FL)	Steam traps for industrial steam efficiency	$1.0M
SUI Northem Gas Pipeline	Solar Turbines (DC)	High efficiency gas compressor stations	$7.0M
		SUBTOTAL	**$8.0M**
OIL & GAS POD			
Government of Pakistan	Union Texas (TX)	Oil & gas exploration & production license	$175.0M

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Government of Pakistan	Occidental Petroleum (CA)	Gas & petroleum development and production license	$100.0M
		SUBTOTAL	**$275.0M**
ELECTRICITY POD			
Lal Pir project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M
Sidhnai project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M
	Enron (TX), Bechtel (CA), GE Capital (CT)	Implementation Agreement for a 760 MW natural gas combined cycle power plant	$740.0M
Sepco	GE Capital (CT)	310 MW natural gas combined cycle	$174.0M
Fauji Foundation	Intraq, Sceptre Power Company	Implementation Agreement for a 144 MW low Btu natural gas combined cycle power plant	$175.0M
Habibullah Energy Ltd.	Ogden Power Systems, GE	Implementation Agreement to build a 104 MW natural gas combined cycle power plant	$105.0M
Hassan Associates	Tenaska (NE), Entergy (AR), GE Capital (CT)	Implementation Agreement for a 585 MW low Btu natural gas combined cycle power plant	$660.0M

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Wakgas (Pvt) Ltd.	Orient Point (NY), Caterpillar (IL)	Implementation Agreement for a 800 Mw (16X50 MW) barge mounted diesel fired power plant	$800.0M
First Capital Securities	Smith Barney (NY)	Energy capital development fund	$100.0M
		SUBTOTAL	**$3,454.0M**
		TOTAL	**$3,937.000**

FOLLOW UP MISSION TO PAKISTAN

DEPUTY SECRETARY WHITE

DECEMBER 12-17, 1994

FOLLOW UP MISSION TO PAKISTAN ON ENERGY INVESTMENTS

LED BY DEPUTY SECRETARY WILLIAM WHITE

December 12-17, 1994

BUSINESS AGREEMENTS SIGNED BY POD

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
RENEWABLE AND ENERGY EFFICIENCY POD			
	Synergics Hydro Asia (MD)	Memornadum of Understanding to develop a 97 MW hydropower project on the Punch River in Kashmir	$187.0M
	Kenetech Wind Power (CA)	Memorandum of Understanding to develop a 100 MW wind power project in Baluchistan	$100.0M
Karachi Power Company/ Omega Pvt Ltd	Omega Zond Wind Energy (CA)	Memorandum of Understanding to develop a 150 MW wind power project in Sindh	$138.0M
	Condyne Enercon Energy Efficiency	Agreement to conduct a pilot study of its energy efficiency technologies to reduce electricity consumption by refrigerators and air conditioners	$.4M
		SUBTOTAL	**$425.4M**
ELECTRICITY POD			

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
Hong Pak/Defense Housing Authority	American United Machinery Co. (OH)	Memorandum of Understanding to supply equipment to develop a 1350 MW coal-fired power project in Sindh	$1700.0M
Sindh Coal Authority	BBI/Brooklyn Marine & Oil, Inc. (NY)	Memorandum of Understanding to develop a 200 MW coal-fired plant near Hyderbad in southern Sindh	$200.0M
Sindh Coal Electric Power Company	Leesburg Financial (DC)	Agreement to develop a 100 MW coal-fired power plant in Sindh	$100.0M
Model Town	Altern Energy (CO)	Memorandum of Understanding to develop a 20 MW thermal power project based on flared gas	$18.0M
		SUBTOTAL	**$2,018.0M**
OIL & GAS POD			
	Union Texas Petroleum (TX)	Extension and Revision on Concession agreements in lower Sindh (Badin I and Badin II)	**
	Union Texas Petroleum (TX)	Concession agreement in eastern Sindh	$3.8M
	Occidental Petroleum (CA)	Zamurden concession agreement	$15.5M
	Occidental Petroleum (CA)	Shaiwal concession agreement	$2.1M
	Occidental Petroleum (CA)	Kamalia concession agreement	$2.1M
	Occidental Petroleum (CA)	Bahawalnagar concession agreement	$2.1M
	Occidental Petroleum (CA)	Mehar concession agreement	$3.8M

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
Hydrocarbon Development Institute	Improved Petroleum Recovery International (TX)	Agreement to conduct dry hole study	$.4M
	Ferrell North American (TX)	Memorandum of Understanding to develop a LPG terminal at Port Qasim near Karachi	$25.0M
Pakistan State Oil	VECO (AK)	Pipeline service contract	$3.0M
Pak-Arab Refinery Ltd.	Willbros Group, Inc (OK)	Turnkey construction project of a pipeline, storage, pumping and terminal facilities	$79.0M
		SUBTOTAL	**$136.8M**
		TOTAL	**$2580.2M**

NOTE: ** = $175M included in Secretary O'Leary agreements

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE

TO CHINA

FEBRUARY 15-24, 1995

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE TO CHINA

February 15-24, 1995

BUSINESS AGREEMENTS SIGNED BY POD

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
		RENEWABLE POD	
State Science & Technology Commission's Department of Industrial Technology - Shi Dinghuan	**AMOCO (IL)/ENRON (TX)** - Robert Kelly/Garry Mihaichuk	Letter of Intent to conduct a feasibility study for a 10 MW thin film photovoltaic manufacturing facility and a 150 MW solar electric generating facility	$290M
Inner Mongolian Provincial Electricity Board - Zhao Fengshan	**FloWind Corporation (CA)**- Harold Koegler	Agreement for Joint Venture for a 100 MW Wind Power Plant	$85M
Zhejiang Wind Energy - Zhang Bao Kang	**FloWind Corporation (CA)** - Harold Koegler	Letter of Intent to form a joint venture for a 30 MW Wind Power Plant	$29.5M
Inner Mongolian Electric Power Company - Zhao Feng Shan	**ZOND Systems (CA)** - Ken Karas	Letter of Intent to build one wind power plant	$110M
Guangdong Nanao Zhen Neng Wind Power Development Company - Zhang Zhen Gui	**ZOND Systems (CA)** - Ken Karas	Letter of Intent for the sale of 54 unit wind turbine generators for the Nanao Island Wind Power Project	$21M
Zhejiang Wind Power Development Company - Zhang Bao Kang	**ZOND Systems (CA)** - Ken Karas	Letter of Intent for the sale of 128 unit wind turbine generators for the Dachen Island Wind Power Project	$51M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
China Chang Jiang Energy Corporation - Yu Zhian	**New World Power (CT)**- John Kuhns	Share Purchase Agreement with China Chang Jiang Energy Corporation to install a 39 MW wind farm for the Fujian Wind I project	$30M
China Chang Jiang Energy Corporation - Yu Zhian	**New World Power (CT)** - John Kuhns	Sustainable Development Agreement to annually conduct a series of official visits between Chinese and American officials to exchange information on renewable resources and technology	N/A
Beijing General Research Institute for Non-ferrous Metals, China Photovoltaic Electric Company - Lin Anzhong/ Mr. Chong	**Spire Corporation** (MA) - Roger Little	Memorandum of Understanding to construct a Polycrystalline Silicon PV production plant to be located in Hebei Province	$7-12M
Yunnan Semiconductor Device Factory - Zhang Weimin	**Spire Corporation** (MA) - Roger Little	Memorandum of Understanding to expand an existing photovoltaic manufacturing plant located in Yunnan Province	$1.5-2M
		SUBTOTAL	**$630.5M**
EFFICIENCY POD			

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Great Asia Industrial Development Company, Shanghai General Building Materials Group Corporation - Chung King Yan/Zhu Ge Tei Zhi	**Owens-Corning** - Ben Yau	Memorandum of Intent to build an insulation plant in Shanghai	$25M (plant) $30M/year (sales)
Yueyang General Petrochemical Works - Du Zu Gao	**Honeywell (MN)** - Mannie Jackson	Letter of Intent for the Yuehua SBS & BUT Distributed Control System Upgrade Project	$400M
Yangzi Petrochemical Company - Tang Min	**Honeywell** (MN) - Mannie Jackson	Commercial Sales Agreement	$3.8M
		SUBTOTAL	**$428.8M**
OIL & GAS POD			
China National Offshore Oil Corporation - Wang Yan	**Chevron (CA)** - Richard Matzke	Offshore Oil & Gas Exploration, Development and Production sharing agreement for South China Sea Block 62/23	$30M
Liaohe Petroleum Exploration Bureau - Li Ming Yi	**Halliburton / Brown & Root (TX)** - Dale Jones	Agreement to form a joint venture company to manufacture high technology flow measurement products	$850,000

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Daqing Petroleum Administration Bureau - Li Xaio Fang	**Halliburton/ Brown & Root** (TX) - Dale Jones	Contract to establish a perforating charge API facility	$638,000
		SUBTOTAL	**$31.5M**
		COAL POD	
Lu Mao Jiang Coal Mine Company, Hunan State Government - Li Jianzin	**EFH Coal (PA)** - Robert Eggleston	Memorandum of Understanding on a 50 MW coal-fired co-generation project	$50M
Shanghai Coking & Chemical Plant - Qui Guang Pei	**Institute of Gas Technology** (IL) - Bernard Lee	Memorandum of Understanding to install a gas turbine to produce 70 MW of power using clean gas from previously installed gasifiers	$70M US share $$35-46M
Huamei Coal Mixture Technology Center - Hao Feng Yin	**Ahlstrom Development Corporation** (CA) - Doug Wert	Memorandum of Understanding to build 2X125 MW power plants using Circulating Fluidized Bed combustion technology	$500M US share $100-200M
Guizhou Power Investment Company - Chen Shi	**Ahlstrom Development Corporation (CA)** - Doug Wert	Memorandum of Understanding to build 2X200 MW power plants using Circulating Fluidized Bed combustion technology	$280M
Ministry of Chemical Industry, SINOPEC - Wang Xinfang/Wang Xin Ming	**Texaco Inc. Alternative Energy Group** (NY) - David Crikelair	Multi-Plant License Agreement for 9 Texaco gasifiers	$500M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Beijing MinMetals & China Nuclear Industry REM Company - Pan Xu Dong	**Carbon Fuels Corporation (CO)** - Lee Meyer	Memorandum of Understanding to establish a joint venture for the exclusive development of the Charfuel coal refining process in China	$300M
		SUBTOTAL	**$1,750.0M**
ELECTRICITY POD			
Shanghai Municipal Electric Power Bureau	**WING Group (CO)** - Larry Haab	Project Development Proposal to replace coal-fired power plant with first large scale LPG power plant (650 MW)	$700M US Share $560M
China National Aero-Engine Corporation, Wuxi New Energy Investment Company - Zhou Xiao Qing/Ye Yong Fu	**Coastal Corporation (TX)** - David Arledge	Letter of Intent to establish the Wuxi City Peaking Project Phase I and Phase II project	$25M US share $15M
Zheqian Thermal Power Plant - Dai Jun Sheng	**Enserch Development (TX) Corporation, East Wind Power Partners** - Frank Maier/Joel Mize	Cooperative Joint Venture and Articles of Association to develop a 3X12 MW coal-fired plant	$27M US share $18.8M
Zheqian Thermal Power Plant - Dai Jun Sheng	**Enserch Development (TX) Corporation, East Wind Power Partners** - Frank Maier/Joel Mize	Letter of Intent to jointly develop a 100 MW combined-cycle power plant near Shaoxing City	$80-100M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Shanghai Jinqiao Heat Power Corporation - Liu Jia Qiang	**Community Energy Alternatives Inc.** (NJ) - Colin Tam	Joint Venture Agreement to establish the Meiya Jinqiao Energy Company Ltd to provide a centralized steam, hot water and cooling system in the Jinqiao export Processing Zone in Pudong, Shanghai	$28M US share $16.8M
North China Power Group - Jiao Yi An	**ENTERGY** (AR)- Terry Ogletree	Long Term Cooperative Agreement	N/A
Sichuan Electric Power Authority - Ma Huai Xin	**InTeSol/Energy Initiatives (CA)** - Barclay Lew/Richard Guy	Letter of Intent to establish a joint venture to build a 2X600 MW coal-fired power plant	$1.2B US share $1B
Jilin Province Energy & Transportation Company, Jilin Province Power Company - Zhang Yan/Guo Xue Chong	**InTeSol/Energy Initiatives** (CA) - Barclay Lew/Richard Guy	Letter of Intent to establish a joint venture to build a 2X300 MW coal-fired plant	$300M US share $150M
China Nuclear Energy Industry Corporation - Liu Xue Hong	**Westinghouse Electric Corporation** (PA) - Nat Woodson	Sales Contract for components of two 600 MW turbine generator units	$24M
Shanghai Municipal Electric Power Corporation Company Ltd., Shenergy Company Ltd. - Yu Ping/Wu Jia Hua	**Cogen Technologies (TX), AIG-Asian Infrastructure Fund** - Bob Sherman/Richard Sun	Memorandum of Understanding to expand the Wu Jing Project (2X600 MW) in Shanghai	$1.2B US share $150M
Beijing District Heating Company - Chen Ming	**Cogen Technologies** (TX) - Bob Sherman	Agreement on the Eastern Heating Plant	$65M US share 45.5M
		SUBTOTAL	**$3,669.0M**

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
ENVIRONMENTAL POD			
National Environmental Protection Agency - Liu Yi	**Energy Resources International (DC)** - Jack Siegel	Joint Statement of Intent on controlling emissions from energy facilities in China	N/A
China International Engineering Consulting Corporation - Zhang Wang	**CH2M Hill International** - Raymond Yep	Association Agreement to form a new entity (CIECC/CH2M Hill Environmental Associates) to carry out projects identified in China's Agenda 21 plan	$20M
		SUBTOTAL	**$20M**
		TOTAL	**$6,509.8M**

Question: How soon will the agreements you reached result in actual trade with China and India or production of products in the U.S. for export to China and India?

Answer: In several cases, the trade benefits are near term. For example, several U.S. companies signed sales or joint venture agreements with Chinese partners which are expected to move forward in the very near term. In other cases, the agreements represent a crucial step forward in our companies' strategies to enter and or expand their presence in the Chinese market.

In China, where over $6 billion (USD) in energy investments were signed, we estimate that 10 of the deals fall into the first category. They are New World Power's purchase agreement with China Chang Jiang Energy Corporation, Honeywell's sales agreement with Yangzi Petrochemical Company, CEA's joint venture agreement with Shanghai Jinqiao Heat Power Corporation, Ensearch's joint venture agreement with Zheqian Thermal Power Plant, Westinghouse's turbine sales contract to the China Nuclear Energy Industry Corporation, CH2M Hill association agreement with China International Engineering Consulting Corporation, Texaco's license agreement with the Ministry of Chemical Industry and SINOPEC, Chevron's offshore exploration, development and production sharing agreement with China National Offshore Oil Corporation, Halliburton's joint venture agreement to manufacture high technology flow measurement products with the Liaohe Petroleum Exploration Bureau and Halliburton's contract to establish a perforating charge API facility with the Daqing Petroleum Administrative Bureau.

In the Secretary's return trip to India, where 23 new projects totalling over $1.4 billion (USD) between U.S. and Indian firms were signed we estimate four of the deals fall into the first category. They are Omnion Power Engineering Company's sales contract with NEPC Micron, Ltd. to supply and install a 100 kilowatt photovoltaic power plant, Oxford Consultant's joint venture with First Custodian Fund (India), Ltd. to initiate industrial and commercial energy audits, TENSA, Inc's joint venture with Energy Consultants Private, Ltd to introduce energy saving technologies in India, and Kenetech's sales contract with ABAN Lloyd Chiles Offshore, Ltd. for delivery of 600 advanced technology wind turbines. These projects raise the total amount of signed energy investments to approximately $9.9 billion (USD) since Secretary O'Leary's first trip to India in July 1994.

Question: How many of these agreements involve U.S. production and how many are for technologies manufactured in China and India?

Answer: All of the agreements involve substantial U.S. involvement, either in the form of U.S. power or resource developers, U.S. private sector investment, or U.S. equipment and service suppliers. Of all of these categories of U.S. participation, the provision of equipment and services from U.S. manufacturing and engineering firms results in the greatest job creation in the United States, according to U.S. industry. U.S. equipment and services are the cleanest and most efficient in the world, and U.S. power developers often prefer to use U.S. engineering services and U.S. equipment. All developers, U.S. and foreign, will use those firms that can provide services and equipment and services on the most competitive basis.

Energy Conservation

Question. It is unlikely that we will be able to sustain all the large increases in the energy conservation budget which were approved in fiscal year 1995. What are the top 3-4 priorities in the area of energy conservation?

Answer: The top four priorities in the Energy Conservation FY 1996 budget request are:

- Partnership for a New Generation Vehicle;
- Energy Partnerships for a Strong Economy;
- Industries of the Future; and
- State grants for low income weatherization assistance.

Each of these programs will produce substantial economic benefits and jobs for the U.S. economy. Each of these initiatives is briefly described below.

Partnership for a New Generation of Vehicle (up $62.7 million to $175.8 million)

The Partnership for a New Generation Vehicle seeks to develop by 2004 a mid-size prototype car that will be at least three times more efficient with no sacrifice in safety, cost or performance. This effort is a partnership between seven federal agencies and all three domestic automakers and their supplier base. The anticipated FY 1996 accomplishments is steady progress toward the technical vehicle goals - including component development and evaluation for a variety of subsystems.

Energy Partnerships for a Strong Economy (up $35.1 million to $74.4 million)

The Energy Partnerships for a Strong Economy includes programs designed to implement the R&D and commercialization provisions of the Energy Policy Act of 1992 (EPACT) as well as the goals of the President's Climate Change Action Plan. The common thread in all these programs is voluntary use of cost-effective new technologies that reduce the energy costs of homeowners and businesses as they improve environmental quality. By the year 2000, these initiatives are expected to save consumers and businesses $10 billion in energy costs without resorting to any additional "command and control" energy or environmental policies. Examples of these initiatives are:

- **Rebuild America**, a voluntary partnership with communities and States to retrofit existing commercial and high-density residential buildings with energy efficient technologies;
- **Energy Partnerships for Affordable Homes**, a voluntary partnership with builders, lenders, equipment retailers, utilities and others to improve the efficiency and affordability of the nation's home;

- **Motor Challenge**, a voluntary partnership with industry to accelerate the use of energy-efficient motor systems; and
- **Climate Wise**, a voluntary partnership with industrial corporations to cut company emissions.

In FY 1996, these programs are expected to greatly increase the number of private sector partners and solid commitments by those partners - including emissions reduction commitments by over 800 utilities, commitments to install efficient motor systems by over 200 Motor Challenge partners, sustained efforts to retrofit commercial buildings in many cities to save energy, emissions and operating costs, and nearly a dozen new partnerships to develop and launch new high efficiency appliances and building equipment.

Industries of the Future (up $21.7 million to $65.8 million)

The Industries of the Future program aims at improving the means of production (while cutting costs and improving environmental quality) of seven major industries. These industries currently account for 88% of all industrial energy and over 90% of all industrial emissions.

The long-term goal of this effort is to improve the efficiency of production so that cost-savings and emission reductions of 10-30% can be realized.

In FY 1996, Partnership industry and technology development agreements will be signed between the DOE and these energy-intensive industries. These partnerships will also accelerate the transfer of DOE laboratory technologies into the industrial marketplace.
Participants will include:

-	Aluminum	Aluminum Company of America
-	Chemicals	Center for Waste Reduction Technology
-	Forest Products	American Forest and Paper Association
-	Glass	Glass Packaging Institute
-	Metal Casting	American Foundrymen's Society
-	Petroleum Refining	National Petroleum Refinery Association
-	Steel	American Iron and Steel Institute

State Grants for Low Income Weatherization Assistance (up $2.7 million to $229.0 million)
The low income Weatherization Assistance program has an essentially flat budget request, but remains a high priority in FY 1996. It provides grants through State agencies to local community action groups to increase the energy efficiency and lower costs of low income housing. To date, the Weatherization program has lowered the costs for 4.4 million homes and saved an average of 18% in their heating bills. In FY 1996, this program will weatherize an additional 115,000 homes directly and through leveraging funds weatherize an additional 110,000 dwellings.

PARTNERSHIP FOR A NEW GENERATION OF VEHICLES

Question: You have a major initiative called the Partnership for a New Generation of Vehicles (PNGV). Please explain what you are doing in this program.

Answer: The Partnership for a New Generation of Vehicles is an historic new collaboration between the Federal government (eight participating agencies) and the United States auto industry. The Partnership is consensus-based and seeks to link the research efforts of the various Federal government agencies and laboratories with those of the U.S. auto manufacturers, in the pursuit of three specific, interrelated goals:

Goal 1: Significantly improve national competitiveness in manufacturing

Goal 2: Implement commercially viable innovation from ongoing research on conventional vehicles.

Goal 3: Develop a vehicle to achieve up to three times the fuel efficiency of today's comparable vehicle.

The Department of Energy (DOE) participates with the Department of Commerce, other Federal agencies, and industry in the overall management and coordination of the PNGV; this involves membership on the Operational Steering Group, which has oversight of the total effort, and membership on the Technical Directorate, which plans and coordinates the technical efforts. Also, many people at DOE contribute to team efforts that provide expertise in specific technical areas. DOE has the major role in implementing the development efforts; in the FY 1996 budget request, DOE programs account for 65 percent ($250 million of $385.6 million) of the total PNGV government funding, with the Department's Assistant Secretary for Energy Efficiency and Renewable Energy implementing 70 percent ($176 million) of the DOE effort.

In addition, DOE has the lead government responsibility on the third goal. Within a decade, this goal seeks to achieve fuel efficiency improvements of up to three times the 26.6 miles per gallon (mpg) average of the 1994 Chrysler Concorde, Ford Taurus, and Chevrolet Lumina and have the equivalent purchase price of these sedans. This new revolutionary class of vehicles should also cost no more to own and operate than the Concorde/Taurus/Lumina, while meeting the customers' needs for safety, quality, performance, and utility.

Possible industry-identified technologies that will meet the criteria of this new vehicle include low emission technologies, new materials, advanced design simulations, power-peaking devices (advanced high-power batteries, ultracapacitors, and flywheels), hybrid propulsion systems, energy conversion (turbines, fuel cells, four-stroke direct-injection engines), fuel reformers, efficient air conditioning systems, etc. The viable technologies that will succeed in meeting the PNGV goals will be pursued through development stages culminating with a production prototype. The industry selection of viable technologies for a concept vehicle that precedes the production prototype will occur in 1997. The FY 1996 requested funding level supports the continued development of the industry-identified key technologies to achieve PNGV Goals. The following describes some of the priority PNGV development efforts in the DOE program:

- Advanced Materials: Advanced materials has been identified by industry as a key area of research and development (R&D) to achieve a vehicle weight reduction target of 40 percent. This will include the enhanced development of lightweight materials, such as polymer composites, with emphasis on cost reduction and manufacturability.

- Hybrid System Development: This is an important system development area identified by the industry to achieve a doubling of fuel economy based upon propulsion system technologies alone. Greater efficiencies can be obtained through the combination of power sources where the individual power sources can be optimized.

- Fuel Cell System R&D: Fuel Cells offer the greatest potential for improved vehicle fuel economy, as well as for emission reduction. This includes systems, reformer, and hydrogen storage technology development; systems optimization; and fuel cell engine mono-block developments. Efforts also continue with industry on identifying precompetitive R&D areas and setting-up a National Fuel Cell Alliance. This Alliance will include a wide spectrum of suppliers and universities to conduct R&D on an accelerated basis to achieve the 80 mpg vehicle goal.

- Gas Turbine and 4-Stroke Direct Injection (4SDI): Industry has identified the gas turbine and 4SDI as leading candidate engine technologies to achieve the 80 mpg goal in the hybrid configuration. Efforts in this area are for developments to reduce cost, improve efficiency, control emissions, and achieve the necessary downscaling for the hybrid. Emphasis is placed on new low-cost ceramic materials for heat engine applications.

- Peak Power Energy Storage: Peak power devices are critical for the success of the hybrid propulsion system. Efforts in this area are for developments in high-power batteries, flywheels, and ultracapacitors, i.e., for batteries, improvement in self discharge, efficiency, cycle life, and cost; for flywheels, reduction in the complexity of the subsystems to reduce costs and improvements in durability/reliability; and for ultracapacitors, development of an electronic interface and the need for significant scale-up for auto use.

- Improved Internal Combustion Technology: This will be implemented primarily through the joint industry/government Engine Support System Technology (ESST) program. The ESST will accelerate development of innovative emission control systems for piston engines that meet challenging Federal and State regulations. The ESST projects include fuel/combustion system optimization, on-board diagnostics, and advanced technologies for manufacturing processes, monitoring/control, and accelerated product development.

- Creative R&D With Suppliers: The Creative R&D effort will support a broader supplier base that will investigate advanced and conceptual technologies with respect to development processes for all three PNGV goals. This effort offers the opportunity for small businesses, individual inventors, and universities to develop ideas and technologies for integration into the PNGV goals and objectives.

- Analysis and Design Methods: Industry has identified this area to develop computational tools that can enable improved analyses of the performance and cost of alternative approaches to triple fuel economy. This will include development of vehicle component models that address key parameters such as energy efficiency, packaging, weight, ride and handling, safety, performance, drivability, reliability, and cost.

- Advanced Manufacturing: Manufacturing technologies are critically important to assuring competitiveness in the marketplace, as well as the ability to produce the new generation of vehicles. Advanced manufacturing technologies will result in: improving the design and development processes to reduce required lead times and achieve cost reductions; and developing new manufacturing systems and new vehicle assembly systems that will increase productivity.

- Emission Control: Industry has identified this as a critical area to achieve long- term goals of the PNGV. This will include research on reduction in NOx, emissions for lean-burn engine technology, exhaust gas specific sensors, and washcoat/catalyst interactions.

Although the PNGV is a recent initiative, beginning in September 1993, the DOE programs making up the PNGV actually pre-date its beginning by many years. These programs respond to mandates in legislation and have their own foundations in laws such as the Electric and Hybrid Vehicle Research, Development, and Demonstration Act, the Automotive Propulsion Research and Development Act, the Energy Policy Act, and Clean Air Act Amendments. Thus, the PNGV is not the basis for justification for these programs. The PNGV program has simply focused, accelerated, and integrated our pre-existing efforts in concert with industry (responding to industry-identified needs). The PNGV is a catalyst or process by which the value of these previous programs to the nation is enhanced.

Question: To what extent is the PNGV program more important than continuing other ongoing energy conservation programs?

Answer: Only the programs of highest priority are included in the DOE Energy Efficiency budget request for FY 1996; the Department's budget process is designed to critique and make judgements on the most beneficial efforts. It is difficult to compare the relative merit of good programs because the differences in timing, cumulative effects, probabilities of success, types of benefits, etc. Moreover, our budget request does reflect some reduced or eliminated programs in order to provide for the priority initiatives in our request. Accordingly, we believe it is essential to fund both our priority initiatives, as well as the ongoing work contained in our budget submission.

However, the Partnership for a New Generation of Vehicles (PNGV) is one of the highest priority programs within the Department of Energy and within Energy Efficiency and Renewable Energy. This Presidential Initiative is a high priority because it has the potential to provide significant economic, energy security, and environmental benefits that are in the national interest. Note that much of the funding for PNGV is provided by current, ongoing R&D projects.

While the prolific use of automobiles has brought this country unparalleled freedom of travel, there are also major national problems of oil dependency, vehicle emissions, and a staggering balance of trade deficit due to imported oil and imported motor vehicles. One recent government study, Section 232 Study by the Department of Commerce, concludes that the extreme dependence upon foreign petroleum and potential supply disruption, coupled with our transportation system's total dependence on petroleum, represents a threat to national security; and the situation is eroding. Cooperative programs like PNGV, rather than adversarial relationships, are needed to address these major national issues of clean air in our cities, improved energy efficiency in the transportation sector, reduction of the balance of payments deficit, and increased competitiveness in the automotive sector to stimulate exports of U.S. cars and reduce the economic impact of imported vehicles. Government support is critical for the auto industry and the national laboratories to undertake the development of technologies that by definition are long-term and higher risk in order to achieve national goals.

In addition to the benefit to industry, the government gets an outstanding return on its investment for the nation. The Argonne Multisector Industry Growth Assessment (AMIGA) input/output model projects that the commercialization of the new generation of vehicles from this program should have the following benefits:

YEAR>>>>	2010	2020
Economic Benefits		
High-efficiency vehicles will generate economic benefits in the form of increased gross domestic product as a result of a reduction in import share (or increased exports) of light duty vehicles, and an improved national balance of payments as oil imports decrease in response to a more energy-efficient automotive sector		
• Gross domestic product (in billions per year)	$23.0	$56.0
Environmental Benefits		
• Carbon dioxide (a greenhouse gas) reduction (in million tons per year)	-----	500
• Additional potential for zero emission vehicles		

Energy Benefits		
• Gasoline displaced (in millions of gallons per year)	7,000	96,000
National Security Benefits		
• Oil imports reduction lessens oil disruption threat		
Social Benefits		
• Jobs created	200,000	n/a

Automotive manufacturing is a major and vital industry in the industrial countries of Europe and Japan because of the jobs produced, the relatively high wages in the industry, and the multiplier effect of jobs and income due to expenditures through supplier and secondary industries. It is because of the economic significance of the automotive industries that the governments in Europe and Asia provide funding support for automotive research and development programs in the same technical areas as the PNGV. In order for the U.S. to remain competitive internationally, which means maintaining a position of technological leadership, our domestic automotive industry must be on a level playing field by being a partner with the Federal government.

Question: For the record, please provide a listing by budget subactivity of all the various pieces of the PNGV program in the fiscal year 1996 budget.

Answer: The various PNGV subactivity programs within Energy Efficiency's FY 1996 budget request are provided below. The page numbers refer to the Department of Energy's FY 1996 Congressional Budget Request, Volume 4.

PNGV ACTIVITIES

PNGV Program/Subactivity

Energy Conservation
- Transportation Sector
  - Materials Technology
    - **Propulsion System Materials (pp. 449-453)**
    - **Vehicle System Materials (pp. 453-459)**
  - Heat Engine Technologies
    - **Light Duty Engine Technologies (pp. 464-469)**
      - **Gas Turbine**
      - **4-Stroke Direct Injection (4SDI)**
      - **Internal Combustion Technology**
  - Electric and Hybrid Propulsion Development
    - **Battery Development (pp. 478-483)**
    - **Fuel Cell Development (pp. 483-489)**
    - **Hybrids Systems Development (pp. 489-490)**

- Industry Sector
  - Industrial Waste
    - **Waste Utilization and Conversion (pp. 370-373)**

Materials and Metals Processing
  Metals Initiative (p. 384)
  Process Electrolysis (p. 385)
  Foundries and Glass (p. 387)

Technical and Financial Assistance
  Inventions and Innovations
    Inventions Evaluations (p. 541)
    Inventor Assistance (p. 541)
    Innovative Concepts (p. 542)
    Technology Assessment & Transfer (pp. 542-543)

NATURAL GAS VEHICLES

Question: What is the Department of Energy's position on mandating the use of natural gas vehicles to reduce ground-level ozone in the Northeast States?

Answer: The Department of Energy does not support mandating the use of specific fuels. There are several statutory requirements under the Energy Policy Act of 1992, however, that will likely result in increasing in the use of natural gas vehicles nationwide, including the Northeast States. These include requirements for Federal, State government, and alternative fuel provider fleets to acquire alternative fuel vehicles. The rules for implementing fleet mandates are fuel neutral, allowing State government and alternative fuel provider fleets to choose among the available alternative fuels. The EPACT also has a contingent requirement for private and local fleets to acquire alternative fuel vehicles if participation by these fleets is necessary to reach the replacement fuel goals of the Act.

The Department is aware that the Ozone Transport Commission has petitioned the Environmental Protection Agency (EPA) to allow adoption of the California Low Emissions Vehicle program in the Northeast States and that the EPA has approved the petition. Our understanding of the petition is that it will not specifically require the use of natural gas vehicles; but could result in a large increase in production and use of natural gas vehicles to meet the stringent emissions standards. If this happens, it would be complementary to the EPACT programs already underway, and could lead to greater success for both the Clean Air Act and the EPACT in the Northeast States.

If the States in the Ozone Transport Commission do choose to take this course of action, the Department is prepared to provide, as needed, technical assistance to auto manufacturers, State governments, and local communities to facilitate the appropriate use of alternative fuel vehicles that can meet Clean Air Act and EPACT requirements.

Energy Conservation Budget Amendment

Question: A couple of weeks ago, we received a budget amendment to reduce the budget request for energy conservation by $10 million. What specifically will you reduce or eliminate to achieve $10 million in savings in fiscal year 1996?

Answer: This amendment is part of the Administration's reinventing Government initiative. The amendment would reduce the appropriations request for this account by $10 million. The reduction is possible due to the Department's streamlining and realignment processes.

This reduction has already been reflected in the Department's FY 1996 Congressional Budget Request. Therefore, the funding amounts included in the Budget are not affected.

Federal Energy Management Program

Question: The Federal Energy Management Program has made great strides in reducing energy consumption in Federal buildings.

Why do we need to continue this program at $25 million a year in the Department of Energy budget?

Answer: The sole reason to continue this program is to reduce the cost of government. Although we have made great progress, we have not realized anywhere near all of the potential to reduce Federal energy costs in the 500,000 buildings owned or operated by the Federal government. We have treated only a few thousand buildings so far and are just starting to do cost-effective conservation projects for vehicular energy and water usage. EPACT places year 2000 requirements on the Federal government which will not be met if FEMP's efforts diminish. FEMP has realized only a small percentage of the $1 billion of potential annual savings in energy costs anticipated by 2005. It takes the ongoing involvement and expertise of FEMP to identify the most cost-effective energy efficiency improvements, leverage agency funds with utilities and private investors, and train energy managers to sustain the energy savings.

FEMP's role is largely one of coordination, education, and advise. The major energy-consuming agencies also have their own budget requests to actually pay for improvement at their sites.

FEMP's budget of $25.4 million is a good investment with demonstrated results. With a new way of doing business that includes partnerships and problem solving, the results can be significantly increased. FEMP uses several methods to help agencies find capital for their efficiency projects. By the end of 1995, FEMP expects to participate in at least 25 energy saving performance contracts. In FY 1996, the program will increase the number of energy savings performance contracts by providing training, technical assistance and on-site support to agencies, with the goal of attracting $20 million in new private sector investments, building to over $1 billion in private sector investments by 2005.

Question: By now aren't the individual agencies capable of handling this on their own? Please explain.

Answer: There is a need for the Federal Energy Management Program to provide more leadership and technical expertise in actually getting more projects completed. Although energy efficiency seems simple on the surface, it is really quite complicated. If it were easy, it would have been done by now. It is worth noting that the Federal government is no different from the private sector in this respect. In the Federal government and private sector, facility managers are not trained in energy efficiency, agency missions set higher priorities for limited funds and staff time, and there are difficult technical and financial issues to overcome. Having FEMP develop and disseminate expertise and coordinate implementation of projects reduces program costs and improves program effectiveness.

Other agencies, such as DOD, GSA, and DVA, do have their own budget requests to pay for their own projects. The FEMP budget includes a small fund to help pay for energy-saving projects in smaller agencies where managing facilities is not a major mission.

As you know, the Energy Policy Act of 1992 states agencies are responsible for implementing the provisions of the act and the Department of Energy provides assistance to them in accomplishing those actions. Let me give you several very specific examples of FEMP leadership and active involvement in development of projects.

EPACT created the Federal Energy Efficiency Fund to provide grants to agencies for efficiency projects. FEMP plans to award $8 million in grants during 1995 to stimulate better projects and leverage utility and private sector funds. During FY 1996, FEMP will award 100 to 150 grants, covering energy efficiency, renewable energy and water conservation projects in Federal facilities. Current returns from the Fund investment indicate that for each $1 spent for the Fund approximately $4 in energy savings is produced over the life of the project and more than $10 may be leverage through private investment by energy service companies and utilities. Thus, the $8 million of FY 1995 funds would likely likely leverage $80 million in private investments, leading to $320 million in additional energy costs for taxpayers.

The same is true with energy savings performance contracts. Agencies need help establishing a baseline, developing and evaluating a solicitation and verifying savings. They look to FEMP for this type of support.

Utility incentives offer one source of project funding. With FEMP's leadership, as much as $400 million may be invested by local utilities. Utilities recognize they cannot be successful in reducing demand without FEMP's help. Over eighteen major utilities are active partners in the Federal Utility Partnership.

In 1995, FEMP launched a pilot Regional Energy Action Project, stationing two-member teams of experts in three regions (Seattle, Chicago, New York) to help Federal energy managers in the field implement efficiency improvements in their buildings and operations. This approach will complete 20 efficiency projects through these Regional teams in FY 1996.

FEMP is working with the Office of Management and Budget to issue a Federal Procurement Challenge -- a voluntary, government-wide commitment to simplify the problem faced by facility managers in selecting the most efficient technologies. In addition, the program will expand markets for energy efficient and water-conserving products; create new markets for high-efficiency technologies; and reduce energy use and greenhouse gas emissions. FEMP is partnering with the General Services Administration, the Department of Defense, the National Institute of Standards and Technology, and the Environmental Protection Agency.

Agencies look to FEMP to provide training and audits. In FY 1996 FEMP will provide 75 training programs, serving 2,500 Federal energy managers from every major agency. Since FY 1994 until March 1995 FEMP has trained 2,569 Federal energy managers in 67 training sessions. It will complete SAVEnergy Action Plans at 500 Federal sites in response to overwhelming requests of over 200 million square feet for energy audits by agencies. The requests received for training and audits are more than what can be delivered to our customers.

Fossil Energy Research and Development

Question: Why does the Fossil Energy research budget drastically cut coal research while funding large increases in natural gas research?

Answer: In the past few years, the overwhelming emphasis in Fossil Energy research and development has been in the energy utilization area. With fossil fuels representing over 85 percent of our current and foreseeable energy mix, we need to strike a better balance between fossil fuel supply and utilization research and development. We also identified several research and development opportunities in gas research and development which could increase our gas supplies with competitive prices. As a result, it was concluded it was important to increase funding in the gas research and development area.

Although the FY 1996 Coal Research budget request is lower than the FY 1995 appropriation, we believe it supports a reasonable and balanced program that is responsive to key coal research and development priorities. The bulk of reductions in the FY 1996 request compared to the FY 1995 appropriation is in the lower priority Clean Fuels Research Program. The highest priority advanced power systems will continue to be funded at a level that is consistent with achieving program objectives.

The primary role that coal is expected to play in the expanding U.S. economy is as the major source of fuel to generate electricity. The focus of DOE's coal program, therefore, is to develop a new generation of advanced technologies to produce electricity from coal more efficiently, more cleanly, and at a lower cost than from commercially available technology.

Question: Overall, coal research is proposed for a 26 percent decrease, with advanced clean fuels research being cut by 57 percent. How can we afford such a large cut in clean fuels research for coal?

Answer: Although advanced clean fuels research is an important longer-term option for producing liquid transportation fuels from coal, the nearer-term commercialization prospects are weak because of low world oil prices. The Energy Information Agency now projects oil prices below $25 per barrel at least out to the year 2010. The goal of the Clean Fuels Program is to develop technology competitive with oil at $25-30 per barrel, which projects to commercial potential around the year 2020. Consistent with this longer term market potential, the research goals of the program can be achieved with the bench and laboratory scale activities supported in the FY 1996 budget request.

Question: Why can't we afford decreases in natural gas research?

Answer: We cannot afford decreases in natural gas research for many important reasons.

- Natural gas is an abundant domestic resource that provides major economic, energy efficiency, and environmental benefits for our Nation.

Increased use of natural gas can reduce use of imported oil and reduce the balance of trade deficit.

- Natural gas provides 25% of the energy consumed in the U.S. Sixty-six percent of U.S. gas produced is provided by independent producers, and these producers drill 85% of the exploratory wells. Independent producers average 2 to 20 employees, and they do not have the means to support research organizations. Major gas producers are discontinuing research programs.
- DOE is serving as a partner and catalyst in research for industry-driven research and development programs that are reducing costs of gas industry operations through advanced, cost-effective exploration, production, processing, and environmental technologies.
- DOE supported research is producing technology improvements which are expanding the economically recoverable natural gas resource base and reducing exploration and development costs and ultimately resulting in lower energy prices.
- Decreases in funding for natural gas research would threaten increased use of this abundant and clean domestic energy resource.

Setting Up a Government Corporation for NPR

Question: Programmatically, what is the difference between making the NPR a government corporation and the way you operate now?

Answer: There are very significant programmatic differences between current NPOSR operations and how it would be run if it was restructured as a government corporation. These differences can be summarized as the difference between "bureaucratic business as usual" v. "best business practices." As documented by the National Academy of Public Administration in its study of the NPOSR program, the Federal Government and its vast, rules-based command and control administrative system is simply incapable of running a commercial energy production operation to maximize its revenues and minimize its costs. A government corporation, on the other hand, will operate with all the flexibility and "best business practices" found in private industry, where maximum asset value is one of the critical measures of success rather than an afterthought.

Question: What disincentives are there now to running the NPR like a business?

Answer: The principal disincentive to operating NPOSR like a business is the failure of the budget system to account for or give any credit to the revenues generated by the program. The entire focus of the system is one sided--on costs--with no cognizance given to the other side of the NPOSR ledger--revenues. Funds for such revenue-generating activities as increased development and remedial projects, infrastructure improvements, and exploration for additional reserves are subject to arbitrary reductions because the ultimate outcome of these projects, increased revenues, is not recognized by the present budgetary system. Many other disincentives currently exist, such as inflexible personnel and procurement requirements, but we believe the failure to properly recognize the linkage between costs and revenues is the most significant obstacle to operating NPOSR in a truly-businesslike manner.

Question: How will corporatizing NPR remove those disincentives?

Answer: A corporatized NPOSR will be subject to the terms of the Government Corporation Control Act. Under this act, the corporation will submit to Congress a business-type budget which will fully account for both costs and revenues. For the first time, revenues will play a part in evaluating the performance of the program's managers. Local control over funding for capital investments and exploratory projects will be provided by a special account (revolving fund), with receipts in excess of projected costs paid to the Treasury in the form of dividends. Corporatizing the program will also eliminate the vast array of requirements and restrictions on procurement, personnel administration, and product marketing that currently inhibit efficient operations.

Question: Why does the budget assume that corporatizing the NPR in fiscal year 1996 will necessarily lead to a sale in fiscal year 1997?

Answer: Corporatization and sale are independent events. Sale of the NPOSR assets in FY 1997 is proposed based on the judgment that it represents the best way to achieve a number of goals of the Administration, including budget reductions, shrinking the Federal workforce, and eliminating programs which no longer serve a Federal purpose, and our judgment that the Reserves may be more valuable to the U.S. taxpayer if they are owned and operated by the private sector rather than the Federal Government. However, corporatizing the NPOSR program does not necessarily have to lead to a sale, either in FY 1997 or at any future date. The FY 1996 budget proposal includes a determination of the minimum value that must be achieved in the disposition of the Reserves, formal Presidential approval of the sale or other disposition, and a 60-day lie before Congress of any proposal to divest these assets.

Question: How long will it take you to set up a government corporation?

Answer: Based on recent experience with the corporatization of the Department's Uranium Enrichment Program into the U.S. Enrichment Corporation, we estimate that it will require a minimum of 6 months, after Congress approves legislation providing the legal authority to corporatize the NPOSR program, to actually accomplish the restructuring and have a functioning corporation operating the Reserves.

Question: Who will serve on the board of directors?

Answer: Legislation which we plan to send to the Congress in the very near future to corporatize the Naval Petroleum and Oil Shale Reserves program does not contemplate the corporation having a board of directors.

Question: Why would anyone want to be on the board, if the corporation will only be operating for a few months?

Answer: Legislation which we plan to send to the Congress in the very near future to corporatize the Naval Petroleum and Oil Shale Reserves program does not contemplate the corporation having a board of directors.

Question: What can you achieve in a few months of operation as a corporation that will maximize the selling price of the reserve for the taxpayer?

Answer: The Department and the Administration have amended the approach for disposition of the Naval Petroleum and Oil Shale Reserves. The revised strategy provides for the Department to make every diligent effort to sell the Reserves in FY 1997. The Reserves will not be sold for less than the net present value of the estimated revenue stream (adjusted for financial considerations relevant to a sale, such as tax payments by a private owner) if the government continued to own and operate them. The Reserves will be corporatized only if the minimum sales price is not met. Legislation is being prepared which (1) authorizes the Department to prepare a sales strategy and put the Reserves on the market, at a minimum price to be determined in accordance with criteria set forth in the statute; (2) amends current legislation to allow the Department to operate the Reserves more profitability between now and the time the Reserves are offered for sale; and (3) if the President determines that offers to buy the Reserves fail to meet the minimum sales price established in accordance with the criteria set forth in the statute, authorizes the establishment of a Government corporation.

Question: When do you expect to submit legislation to the authorizing committees on this issue?

Answer: Draft legislation is presently in the final clearance process in DOE. After approval by the Secretary, it will be submitted to the Office of Management and Budget for review and dissemination to other government agencies with an interest in this area. We anticipate submitting this legislation to the Congress in April, 1995.

Impact of Caretaker Budget for NPR

Question You estimate receipts from NPR will be $461 million in fiscal year 1995. What receipts will you generate in 1996 if you are in a caretaker status?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. Only if it is determined that the minimum sales price as established by criteria set forth in that statute will not be met, would a Government corporation be established for operation of the Reserves. Preliminary analysis indicates that new, incremental administrative costs associated with the formation of the corporation would be incurred. These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A complete analysis of start-up costs is being prepared as part of a Business Plan for the corporation, which is expected to be completed by late May 1995.

Strategic Petroleum Reserve

Question: Do we still need a Strategic Petroleum Reserve? If so, why?

Answer: Yes, the Strategic Petroleum Reserve still serves the same purpose it did when it was authorized in 1975. While the development of additional oil reserves outside the Persian Gulf has led to greater diversity in suppliers of oil to the U.S., maintaining the Strategic Petroleum Reserve inventory remains critical to ensuring our energy security. There is still potential for supply disruptions to the world market caused by wars, political and religious unrest, natural disasters and failure in transportation logistics. Also, U.S. oil imports are projected to rise from nearly 50% today to 60% by early next century; the world's oil reserves are becoming increasingly concentrated in the highly volatile Persian Gulf region; and U.S. leadership in stockpiling is critical to the accumulation of stocks in other International Energy Agency member countries.

Question. What do you see as the pros and cons of privatizing the SPR?

Answer: "Privatizing" the Strategic Petroleum Reserve has been defined in different ways by different advocates. The two most common definitions are: 1) that private industry would be forced to pay the carrying cost of oil and/or the cost of storage, and 2) that the program would be discontinued and the oil inventory sold to private industry.

Forcing the cost of the Strategic Petroleum Reserve onto private industry would lower the cost of the program to the Government. However, the program is designed to yield benefits to all of society, not just the industry, and while major oil companies are very profitable, independent oil companies have been struggling financially. Also, a Government run program with centralized storage of crude oil is the most efficient form of strategic petroleum storage. For these reasons - equity, practicality and efficiency - no administration has ever supported the idea of creating a regulatory program that would put the burden of strategic storage on the oil industry.

Discontinuing the Strategic Petroleum Reserve would reduce costs, and sale of the oil would reduce the Federal Government's debt. However, the motivating factors for creation of the Reserve 20 years ago are still present. Oil consumption is rising and domestic production is falling. Imports now account for 50 percent of consumption and projections are for an increasing share for imports. Growth in the world's petroleum exports will increasingly come from areas that are politically unstable and potentially hostile to importing countries in general and to the United States in particular. In addition, strategic storage is the most important aspect of the International Energy Program, and membership in the International Energy Agency requires the maintenance of a 90 days-of-imports inventory. Discontinuing the Strategic Petroleum Reserve would end U.S. leadership in inventory building, and might signal the end of all international cooperation in planning for energy supply interruptions. No administration has ever favored abolishing the Strategic Petroleum Reserve, and now is not an appropriate time to consider dropping our only insurance against supply interruptions.

Question: What is your current estimate of the cost to relocate the oil currently in storage at Weeks Island?

Answer. The current estimate for movement of the oil in storage at the Weeks Island site to other Strategic Petroleum Reserve sites, primarily during fiscal year 1996, is $31 million. It is the largest single element of the total estimated cost of $75-100 million for decommissioning.

Question: What would be the impact of selling the oil in storage at Weeks Island rather than relocating it?

Answer: The oil in the Weeks Island storage site is a blend of many different sour oils. It has never been sold and refined. As a result it has unknown refining characteristics, and because of this uncertainty during a time of plentiful petroleum supply, the Weeks Island oil would be expected to sell at a discount to its assayed value. Because of the currently low values of crude oil relative to the average acquisition cost of the SPR oil, the program would have to expect to book a loss on the sale.

Selling either 60 million (with 12 million barrels being transferred to Bayou Choctaw) or 72 million barrels of oil over a period of about a year would be an increase in commercial supply of about 165,000 barrels per day. The increased supply might further soften already weak oil markets, lowering the price of oil.

The impact on the Strategic Petroleum Reserve would be to reduce the oil inventory to about 532 million barrels from 592 million barrels. Days of import protection would fall by about 8 days, and the newest SPR storage site at Big Hill, Texas would continue to contain only a minimum inventory.

Question: What is the total cost of the life extension program for the SPR?

Answer: The total cost of the seven year life extension program which began in fiscal year 1994 is approximately $361 million.

Question: How many years will it take to complete the life extension program and how long will we be able to continue the SPR after this effort is completed?

Answer: The Life Extension program is a seven year program from fiscal year 1994 through fiscal year 2000. Fiscal year 1996 is the third year of the program. At the end of the process the expected life of the critical systems at all sites will be 25 years

Question: How important is the life extension effort?

Answer: The life extension effort is very important and will ensure operational readiness in the event of an energy emergency. The surface facilities at the Strategic Petroleum Reserve sites are approaching their designed initial life expectation of 20 years and are requiring more repair and maintenance to remain operable. A number of failures have already occurred due to worn out components such as electrical power distribution systems, on-site piping, and brine disposal pipelines. The Life Extension Program restores all of the critical functions by streamlining, standardizing and replacing obsolete and worn out systems and components. At the end of the process, the expected life of these critical systems will be 25 years, and maintenance and repair costs will be reduced.

Question: What would be the consequences of delaying the SPR life extension program?

Answer: A significant delay of the life extension program will result in the deterioration of site reliability and increased maintenance costs as obsolete systems and old equipment are pressed to stay in service. A year delay of life extension construction projects would not pose significant risks to personnel or the Reserve's mission capability, or increase costs substantially.

Funding Shortfall in NPR

Question: How will the recoverability of the oil resources in Elk Hills be affected if your proposed caretaker budget is adopted and the corporatization proposal is not acted upon?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. Only if it is determined that the minimum sales price as established by criteria set forth in that statute will not be met, would a Government corporation be established for operation of the Reserves. Preliminary analysis indicates that new, incremental administrative costs associated with the formation of the corporation would be incurred. These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A complete analysis of start-up costs is being prepared as part of a Business Plan for the corporation, which is expected to be completed by late May 1995.

Question: How much additional funding would be required to ensure continued operations at the maximum efficient rate at Elk Hills if you don't corporatize?

Answer: The funding provided below would be required to meet MER requirements and maximize return to the government of operations at Elk Hills:

	FY 1996 ($000)
Operations & Maintenance	$ 98,989
Development Drilling	31,450
Exploration Drilling	3,000
Development Facilities	19,000
Subtotal:	$152,439

In addition to the FY 1996 budget request, this level of funding adds the following activities at Elk Hills: a 220 well remedial program; a 33 well drilling program, including five horizontal wells; two Stevens Zone exploratory wells; and a number of facilities projects.

Question: Under your budget proposal, will you be forced to operate in violation of the law which requires operations at the maximum efficient rate if you have a caretaker budget and no authority to corporatize? Please explain.

Answer: Operation of Elk Hills under a "caretaker" budget would necessitate elimination of all infrastructure and capital investment spending, including new development drilling, remedials and well workovers, and facility improvements. In addition, no exploratory work to locate additional oil and gas reserves would be done. We would continue as our highest priority to operate the fields in full compliance with all environmental and safety laws and requirements.

The inability to perform the operational activities listed above would result in a decline in production of about 10,200 barrels of oil per day, 40 million cubic feet per day of natural gas and 64 thousand gallons per day of liquid products, of which the Government's share is approximately 78 percent.

Funding Shortfall in SPR

Question: What have the authorizing committees told you with respect to your proposal to sell Weeks Island oil and use the proceeds for decommissioning Weeks Island and for SPR operations?

Answer: Several Congressional hearings have made reference to the proposal to sell Strategic Petroleum Reserve oil to fund the decommissioning of Weeks Island. The Administration's legislation was transmitted on March 27, and received by the House on March 28 and referred to the Committee on Commerce. The legislation was received by the Senate on March 30 and referred to the Committee on Energy and Natural Resources. As yet, we have not had substantial discussions with the authorizing committees concerning this proposal.

Question: If you don't receive legislative authority to sell Weeks Island oil and to use the proceeds for decommissioning Weeks Island and for other SPR operations, what amount, at a minimum, would need to be added to your budget to ensure essential work is done in fiscal year 1996?

Answer: If the Department does not receive legislative authority to sell Weeks Island oil and to use the proceeds for decommissioning Weeks Island, the Department would need at a minimum $30 million in FY 1996 to remove the oil. The Department would be unable to proceed with any of the decommissioning activities at Weeks Island beyond actual removal of the oil. Preparation of mine flooding, environmental restoration and site closure would all be postponed. In addition, approximately $40 million of the $100 million total is required to fund other SPR operations and facilities during FY 1996, without funding. The Life Extension Program would have to be curtailed and drawdown mission readiness at three of four sites would be reduced to 150 days advance notice versus 15 days notice.

Clean Coal Technology

Question: What is the current unobligated balance of Clean Coal Technology funding? How much of this amount is needed to complete existing clean coal projects? Please provide project-by-project details for the record.

Answer: Through fiscal year 1995, $2,259,716,000 of clean coal appropriations have been made available to the Department. All of these funds have been committed to either the 45 projects or management of the program. As of February 28, 1995, $1,263,135,000 of the available funding has been obligated, leaving an unobligated balance of $987,310,369. These figures do not include advance appropriations enacted for fiscal years 1996 and beyond which are not yet available for obligation by the Department. Assuming that all 45 active projects in the program continue to completion, all of the current unobligated balance will be required since a total of $1,343,525,189 is required to complete funding of these projects. The table below lists the remaining obligation on a project-by-project basis (as of February 28, 1995).

PROJECT	DOE SHARE OF TOTAL PROJECT COST	OBLIGATED TO DATE	REMAINING OBLIGATIONS
Clean Energy Partners	183,300,000	3,866,482	179,433,518
Mountaineer	184,800,000	9,088,000	175,712,000
CPICOR	149,482,242	0	149,482,242
Four Rivers	142,460,000	13,936,600	128,523,400
CE-IGCC	129,357,204	7,800,000	121,557,204
TAMCO	95,000,000	4,552,000	90,448,000
DMEC-1	93,253,000	5,958,000	87,295,000
Air Products	92,708,370	12,518,140	80,190,230
Wabash River	219,100,000	166,799,433	52,300,567
York County	74,733,833	4,843,725	69,890,108
Sierra Pacific	154,275,500	115,632,500	38,643,000
NOXSO	33,506,012	4,639,436	28,866,576
Tampa	130,353,223	110,253,223	20,100,000
ThermoChem	18,666,737	1,506,577	17,160,160
Easton Diesel	19,154,758	2,137,350	17,017,408
Custom Coals	38,038,656	25,946,375	12,092,281
Rosebud	43,125,000	34,500,000	8,625,000
Bethlehem - Coke Oven Gas	13,500,000	11,915,800	1,584,200
Bethlehem - Coal Injection	31,259,530	30,064,530	1,195,000
Penelec	73,416,000	2,200,000	71,216,000
EER - Low NOx	8,905,585	8,087,290	818,295
TOTAL			1,343,525,189

Question: What clean coal projects can be terminated without incurring close out costs for the government and when could such terminations occur?

Answer: The contract vehicle used in the Clean Coal Program is cooperative agreements. DOE has established milestone decision points in each cooperative agreement. The period between decision points is called a budget period. DOE obligates money, in this program, by budget period. Under the terms and conditions of these cooperative agreements, DOE can not unilaterally deobligate funding from a cooperative agreement. DOE and the participant have decision points at the completion of budget periods. DOE uses a set of programmatic criteria for approving continuation applications. Approval, however, is subject to available funds. While DOE does not have the right to unilaterally terminate a project, since they are administered under the Financial Assistance Regulations, it can reject a continuation application on the basis of insufficient funds. This can only occur at a project decision point. There would be no termination costs if DOE does not approve a continuation application.

Question: What amount of funding is in the Clean Coal Reserve Fund and how are these funds used?

Answer: The Clean Coal Program Reserves are currently at $13.9 million. The $13.9 million remaining in reserve are needed to fund Program Direction activities for FY 1996. Other than the $13.9 million, no funds are currently available in the Clean Coal Technology Program to fund Program Direction activities or project cost growth. The remainder of the Program funds are committed to active Cooperative Agreements, with the exception of one remaining CCT-5 project that is in negotiation.

Question: To what extent do you fund cost overruns in the Clean Coal Program? How do you decide whether or not to fund overruns?

Answer: The enabling legislation for the Clean Coal Program authorizes the Secretary to provide financial assistance to projects in excess of those estimated as of the date of award of original financial assistance up to 25 percent of the original financial assistance. Awards of this type have been made to the extent that they have been justified. The decision to fund overruns is made on the basis of the degree to which a number of criteria are satisfied. These criteria have been defined in Appendix A of a May 1995 Comprehensive Report to Congress, entitled, Clean Coal Technology Program Completing the Mission.

Clean Coal Budget Amendment

Question: We recently received a budget amendment which would reduce $35 million from the Clean Coal program. Why were rounds 4 and 5 of Clean Coal targeted for reductions in the amendment? (-$20 million from round 4 projects and -$15 million from round 5 projects)

Answer: The proposed reduction of $35 million was applied to advance appropriations targeted for rounds 4 and 5 because all the budget authority for the first three rounds has already been provided to the Department in prior years. For budget accounting purposes, therefore, all remaining advance appropriations relate to fully funding rounds 4 and 5. Congress, however, included merger authority language in Public Law 102-154 which authorizes the project funding for all five rounds to be managed by the Department as a single account. Consequently, the reduction of $35 million would reduce overall funding to finance the 43 remaining active projects and would not necessarily be constrained to one or more projects in a specific round. In other words, budget savings realized due to the early termination of any of the remaining 43 projects in the program could be used to offset the proposed budget reduction of $35 million.

Question: What round 4 and 5 projects are potentially not viable?

Answer: The projects in both of these rounds are progressing well. Of the seven remaining projects from CCT-IV, one has started operation, three are in construction, and three are finishing design. Four of the CCT-V projects are in design with one completing negotiations.

Question: Does this budget amendment mean that all the projects in the first 3 rounds are proceeding without any problems? Please explain.

Answer: Congress has appropriated all of the moneys for the first three rounds of the Clean Coal program. The remaining advance appropriations in FY 1996 and FY 1997 are identified, for budgetary purposes, for CCT IV and CCT V. These are the funds that are available for rescission in FY 1996 and FY 1997. As projects reach milestone decision points, DOE is applying the same procedures and criteria that have been reported to Congress. The budget amendment does not imply anything about the status of the projects in the first three rounds.

ENERGY INFORMATION ADMINISTRATION

Question: Why does the Department need its own statistical agency, the Energy Information Administration?

Answer: The Energy Information Administration (EIA) was established by Congress in 1977 to provide a centralized, comprehensive source of credible energy information. At the time, the debate on energy frequently focussed on what the real facts about the situation were, rather than the substance of the issue. EIA has effectively accomplished its mission by establishing itself as a trusted and reliable source of energy information that is widely accepted by all parties. EIA publishes a recurring series of statistical publications, short- and mid-term forecasts, and analyses of current energy issues, and responds to over 160,000 public inquiries each year, with a high level of customer satisfaction.

The collection of timely and accurate statistical data is a core Government function that is essential to the development of sound policy, knowledgeable business decisions that keep our economy strong, and public understanding. The Government is in a unique position to perform this function not only because it possesses the mandatory authority necessary to collect company-specific information, but also because it is viewed as an objective, unbiased source of information.

EIA does not serve the Department of Energy exclusively, its data are used extensively by the Administration and Congress in the consideration and development of energy policy and by Federal and State agencies in performing their ongoing functions. For example, EIA data were critical in the decision to deregulate the natural gas industry and in establishing emission allowance for utilities under the Clean Air Act Amendments. The Bureau of Economic Analysis uses EIA's petroleum data for the Gross Domestic Product accounts. The Bureau of Labor Statistics uses EIA's energy price and sales volumes in their Producer Price Index and Consumer Price Index. The Federal Energy Regulatory Commission and State Public Utility Commission use EIA data and analyses in performing their statutory functions.

Business, industry, and the media are also major users of EIA data. With the move toward deregulation of energy industries, timely and accurate information has taken on an even more important role, since it is an essential ingredient for markets to perform efficiently. EIA data are cited widely by major news organizations, a broad spectrum of trade journals, newsletters, and national and local radio and television networks.

Question: What does EIA do that private industry wouldn't do in its absence? (If this information is commercially valuable, why wouldn't private entities collect it and sell it?)

Answer: Currently, EIA has the authority to collect energy information and data under legislated mandates in Federal public law. Private entities do not have this authority. Much of the data collected by EIA is company proprietary and is aggregated by EIA such that company-specific information is not disclosed. It is doubtful that current survey respondents would provide this sensitive information to private entities.

EIA data and information is comprehensive. Private entities are profit driven, thus, only data and information which can produce the greatest profit would be collected and made available for sale

Data and information held within private entities would be copyrighted. All potential users of this information would have to pay for access to this information. Thus, it would not be readily accessible to the general public and would result in increased cost to the taxpayer. Federal statistical agencies have been working more closely together recently to attempt to integrate statistical activities in such a manner as to ensure availability of, and access to, necessary data while reducing duplication and overlap. A private entity would not pursue this effort, because it would negatively impact their profit margin. In addition, all of EIA's systems are open and documented. Policymakers and the public may not have confidence in systems whose workings were proprietary and not open for outside inspection.

Question. Who would be affected by the elimination of EIA? Please provide details for the record.

Answer: EIA data are a recognized and integral statistical source for customers in Federal, State, and local governments, private industry, the media, and the general public. Customers from all segments of society would be negatively affected by the elimination of EIA. EIA responded to over 160,000 questions and data requests, and disseminated over 466,000 copies of EIA publications in 1994. EIA has also increased its on-line data access, and these services are rapidly increasing from a level of 30,000 in 1994.

Energy policy makers in the Administration, the Department of Energy, and Congress have relied extensively on EIA data analyses and forecasts. However, other Federal agencies are also major customers of EIA:

- The Bureau of Economic Analysis uses EIA's petroleum data for the Gross Domestic Product accounts.
- The Bureau of Labor Statistics uses our energy price and sales volume data to verify and re-weight the Producer Price Index, the Consumer Price Index, and to calculate foreign crude oil price indexes.
- EIA data on coal, electric power, and petroleum are used by the Environmental Protection Agency for developing the National Allowance Data Base and associated calculations.
- EIA analyses of waste water treatment costs associated with offshore oil and gas production are used by the Environmental Protection Agency.
- The Department of Commerce uses jet fuel retail price and supply data in its projections regarding domestic and international tourism.
- EIA provides estimates of residential energy costs to the Administration for Children and Families, U.S. Department of Health and Human Services.

- The Federal Energy Regulatory Commission uses EIA data and analyses in conducting their statutory functions.

- The Commercial Buildings Energy Consumption Survey serves as a data collection vehicle for the Bureau of the Census, obtaining information on expenditures for building alterations and repairs.

- EIA also supplies data to the Commodity Futures Trading Commission, the Council of Economic Advisors, the Office of Management and Budget, the Treasury Department, the Congressional Budget Office, and the General Accounting Office.

Other governmental customers EIA serves include:

- The Nuclear Energy Agency of the Organization for Economic Cooperation and Development relies on EIA for historical data and projections of nuclear electricity generation, associated nuclear fuel cycle requirements, estimates of uranium resources, and electricity generating costs.

- The International Energy Agency uses EIA's information and analyses on energy sources as the official statistics to describe the U.S energy situation in international forums and publications.

- State government offices use EIA's price forecasts for state and regional assessments of proposed energy taxes and alternative energy strategies, and for ongoing analyses of supply, demand, and fuel substitution on a State-by-State basis.

Business and industry are also major customers of EIA's information and would be adversly affected by a major cut in energy information. This includes not only energy suppliers, but the financial community and energy consumers in business and industry. Timely and accurate information is essential for energy markets to function efficiently, to keep supply and demand in balance, and to minimize inventory levels and still meet consumer demand Industry and business also require this information to make investment decisions on production capacity, energy- using capital equipment, and plant sitings. Finally, EIA's data, analyses, and forecasts are used extensively by trade associations, mass media, a broad spectrum of trade journals, newsletters, and statistical reference materials. Through these mass forms of communication, EIA information efficiently reaches a much broader segment of users than reflected in the direct customers of our products and services.

Emergency Preparedness Functions

Question: It seems that the office of emergency preparedness serves mostly in a coordinating role within the Department. Could you achieve some savings by folding this office in with another group within the Department or spreading some of its duties directly to the program offices? Please explain.

Answer: The Federal government has a role to monitor the security of this Nation's energy systems and supplies, and to be prepared to mitigate energy emergencies. To accomplish this task, the energy emergency preparedness program leads efforts to: 1) advance energy emergency policy and planning; and 2) conduct operational response measures to reduce the impacts of supply disruptions on public safety, the economy and on national security. The first function resides in the Policy Office and the second in the Office of Nonproliferation and National Security.

On May 12, 1994, Under Secretary Curtis established a Task Force to review consolidation of Headquarters Emergency Management functions and activities to promote efficiency and reduce costs. The Task Force concluded in a report issued October 31, 1994, that the existing Emergency Management System provides the basis for an efficient operating system within and outside the Department, and that no significant cost saving could be realized by consolidating Headquarters Emergency Management functions and activities. However, the Task Force identified several enhancements to reduce cost and improve efficiencies.

Action associated with these activities to reduce cost and promote efficiency were put on hold as a result of the Secretary's strategic alignment initiative, which commenced activities on January 3, 1995. One of the charges of the Strategic Alignment Team is to identify ways to reduce costs and promote efficiencies by elimination of redundancies and duplications in the Department. A report is to be delivered by April 28, 1995, with implementation of Departmental accepted recommendations by September 30, 1995.

Economic Regulation

Question: The former Economic Regulatory Administration, which was charged with investigating and litigating petroleum overcharge cases associated with the old petroleum price controls, has been incorporated into the Office of General Counsel.

How much longer will we need to fund the efforts of the old Economic Regulatory Administration?

Answer: To reduce overhead, the Economic Regulatory Administration (ERA) was merged into the General Counsel's (GC) office in November 1994. However, staff and budgetary resources will still be needed to resolve the remaining 19 oil overcharge cases, because claims in these cases total $2.2 billion and 40 percent of any recoveries are paid directly to the Treasury. The General Counsel's goal is to resolve these cases either through litigation or settlement by the end of FY 1996. If this effort succeeds, there will be no need for additional funding by the Interior and Related Agencies Subcommittee in FY 1997 and thereafter.

Question: What major cases are still outstanding?

Answer: The major petroleum overcharge cases still in litigation are:

CASE	CLAIM AMOUNT
OXY USA Inc.	$1,123 million
Chevron USA, Inc.	295 million
Houston Oil & Refining	272 million
In Re: LaJet, Inc.	245 million
Phoenix Petroleum, Inc.	126 million

The overcharge claims in twelve other cases total approximately $171 million.

Question: Why can't this work be absorbed into the other litigation efforts of the Office of General Counsel, rather than receiving a separate appropriation through the Interior Bill?

Answer: One of the difficulties of being in the final stages of litigation of the old ERA cases is the necessity of maintaining our regulatory enforcement expertise and litigation capability until these cases are completed, especially in light of the large dollar amounts at stake. The FY 1996 funding request is for $3.7 million which will support 29 FTE's. Although this is only a small portion of the total GC budget, the current resource needs and personnel levels required by this work cannot be absorbed by our portion of the Energy and Water Development Subcommittee appropriation. As noted above, it is our objective to resolve the remaining cases in FY 1996, which would eliminate any need for funding in FY 1997.

QUESTIONS SUBMITTED BY CHAIRMAN RALPH REGULA

General

Question: When you appeared before the subcommittee last month you seemed committed to reducing the budget of the Department of Energy. I was greatly encouraged by your remarks and we discussed the exercise the Department had been through internally and your objectives of downsizing. I was then shocked to see a budget which actually increases despite your pledge to contribute $14.1 billion in savings over five years to finance the President's middle class tax cut. Given you commitment to reducing the Department how do you justify the 1.9% ($337.4 million) increase in your fiscal year 1996 budget proposal? Why should DOE not begin the downsizing now rather than waiting until the outyears?

Answer: For FY 1996 we have contained the growth in our programs. When we looked last summer at the combined future costs of our new commitments—in stockpile stewardship, nonproliferation, Soviet-built reactor safety, Climate Change Action Plan, the Energy Policy Act of 1992, as well as new facilities for high energy physics, nuclear physics, material sciences and biotechnology—we saw a curve that went steadily uphill. We realized that in undertaking new activities in response to Congressional and Administration initiatives we were facing a budget that would be out of control within only a few years. Our FY 1996 budget halts this trend. It is a launching pad for a steady and prudent decrease over the next few years toward the cost-effective achievement of our missions.

The $300 million increase in the FY 1996 budget versus FY 1995 reflects critical new initiatives in the national security and science areas, in particular, programs and facilities to ensure confidence in the nation's weapons stockpile, given the moratorium on underground testing. It also reflects the costs of downsizing, particularly in Environmental Management, where up to $200 million will be required in FY 1996 for major work force reductions.

We have made great progress in carrying out our missions at a lower cost and with fewer employees. Almost within our first month at the Department, we identified a way to save $1.55 billion over five years by freezing contractor salaries for a period of one year. We have moved to performance-based contracting. Implementing this change at our Hanford facility alone will save an estimated $1 billion over the next five years. The Department will be re-competing over $40 billion worth of contracts in the coming years to establish contract reforms. In all, we expect these reforms to save over $5 billion in the next five years.

The Department has committed to saving $14.1 billion through FY 2000 in support of the President's plan to cut taxes for middle class Americans and further reduce the deficit. Over the coming five years, we will cut $8.4 billion from our programs and sell assets worth an estimated $5.7 billion. The result will be a Department that is more focused on missions of critical value to the nation: advancing U.S. leadership in science and technology, safeguarding national security, cleaning up the Cold War environmental legacy, and securing an affordable, sustainable and productive energy future.

In December, building on our Strategic Plan, we began an initiative to strategically align our activities to reflect changing world conditions and changing demands on our science and technology infrastructure. A task force of the Department's employees is conducting an intensive four-month review of our activities, targeting for elimination redundant or unnecessary work and management layers. We will overhaul or eliminate lower priority programs and identify work that would be better performed elsewhere. We have also asked a task force led by Dr. Daniel Yergin, Pulitzer Prize winning author and President of Cambridge Energy Research Associates, to look at how we can improve our energy research and development work. The task force will submit its recommendations in June.

As you know, over the past year a task force headed by Bob Galvin, chairman of the executive committee of Motorola, has been examining the role of our national laboratories. The Galvin Task Force has clearly and forcefully validated the importance of the major research and development missions of the Department and its laboratories. The report also recommends that the Department's laboratory system be downsized through management efficiencies and the elimination of functions and redundancies. These recommendations will provide the means for a more efficient and cost-effective Department laboratory system than ever before. We will ask the full Secretary of Energy Advisory Board to assist in further assessing this proposal and its implications.

The $14.1 billion in reductions that we propose the Congress and the Department achieve over the next five years will have to come from three sources. We must cut some programs, sell some assets the government no longer needs, and continue to increase our productivity and cost-effectiveness. We will build on the momentum already established at the Department to institute historic budget cuts and management improvements. When we have finished—and our Strategic Alignment Initiative will contribute greatly to this effort—we will all see that the missions that remain are vital to the nation and belong together.

Question: You recently completed a trip to China and India. When you last appeared before the Subcommittee I told you I would be interested in hearing about your trip. What tangible benefits in terms of promoting U.S. energy industries did you achieve on this trip and can you attribute the work of DOE in support of successful technologies to improving our position in the competitive global economy?

Answer: International energy projects involving U.S. industry create jobs and economic growth in the U.S. as well as in the partner country. Departmental initiatives focused on South Asia stress the development and strengthening of private sector partnerships whereby the people of the United States and Asia can advance energy, economic and environmental objectives. Through the promotion of sustainable energy trade and investment in targeted regions, the U.S. can capture contracts that will bring U.S. technology and expertise to meet our partner nations' needs. Our nation has made a substantial investment in developing clean, affordable and efficient energy technologies giving U.S. industry and their workers a competitive edge in meeting these global energy needs. For example, when rural villages are electrified using renewable energy technology manufactured by skilled workers in California, Colorado and Massachusetts, tremendous new opportunities for learning and working appear in the villages. Small manufacturing facilities can open. As a middle class continues to emerge in South Asia, greater demand for U.S. goods and services result. The cycle builds upon itself.

In order for business agreements to reach financial closure, the policy climate must be right. That's where we, as government leaders, can play an important role. High-level consultation and dialogue with foreign governments can facilitate policy reforms and help reduce the impediments to favorable investment climates. By creating a framework of fair and open competition, investment climates improve dramatically and result in job creation both domestically and abroad.

We carry out our export promotion and policy dialogue in a manner coordinated with and supportive of overall federal trade promotion activities. We work with the Department of Commerce as part of the Trade Promotion Coordinating Council, where we have jointly developed a strategy for the "Big Emerging Markets", such as those in Southeast Asia. Specifically, the Department leads in the federal agencies' trade promotion in the energy sector, where our expertise and relationships provide advantages for U.S. business' trade and development interests.

Our commitment to realizing the opportunities presented by the potential of South Asia is reflected in the Presidential Missions to the region which have resulted in energy business agreements valued in excess of $27 billion. That could equate to tens of thousands of new jobs created in the United States. Our "sustainable energy and trade" missions are composed of diverse delegations which represent a broad spectrum of large and small energy companies, financiers, environmental groups and government specialists. Highly focused missions, with the technical, financial and regulatory expertise needed to address the energy-related challenges faced by regions of dynamic growth, demonstrate the unique capabilities the United States has to offer.

While the immediate results of our efforts speak for themselves, I am most encouraged by the policy dialogue we have initiated that will strengthen relationships in this area of the world and facilitate business partnerships. We have demonstrated on our missions that when barriers to energy cooperation are addressed by all those who have a stake in the outcome, great things happen. Communication opens, trust emerges and consensus is built. This process requires convening a "summit" of both nations' business leaders, investment bankers, non-governmental organizations and government officials, including federal, regional, and local authorities. This type of comprehensive representation leads to the exchange of ideas about innovative policies to spur the use of advanced technologies and better practices and ultimately results in trade and investment partnerships that deliver clean, affordable energy to fuel the economic growth of South Asia with U.S. technology, capital and expertise. Our summit dialogues have produced detailed action recommendations that we in government are addressing with our counterparts in India, China and Pakistan.

General

Question: Based on your recent travels, what role do you see coal playing in the global energy mix? Is coal likely to be the fuel of choice prospectively worldwide and if so does that give us an increased responsibility to continue to develop clean efficient coal burning technologies?

Answer: Many of the economies of the world are very much dependent on coal to supply much of their energy needs. Unfortunately, much of the coal is currently used in a very inefficient and dirty manner. As the economies of these developing countries mature and they continue to increase their electricity generation capability, they are likely to use coal as their fuel of choice for baseload electric power generation. China, for example, has indicated that it will continue to rely upon coal and is extremely interested in importing U.S. technology for coal cleaning, coal upgrading, and most of all for power generation.

The global market for clean coal technologies over the next 20 years has been projected to be in the $1 trillion range. Power generation capacity additions, alone, are projected to be in the 320 GW range (that is over a thousand 300 MW power plants).

The success of the DOE Coal Research and Development Program has made the U.S. the global leader in clean coal technology and continuing development and demonstration progress will assure the U.S. of capturing a good fraction of the market. Our FY 1996 budget request in coal will assure this progress continues to be made.

Question: As you recall last month we heard from a number of independent groups who advocated a variety of alternatives to a stand alone Department of Energy. The cry seems to have grown again to abolish the Department of Energy. What defense would you give for your Department's existence and what do you see as the appropriate federal role for your Department?

Answer: From both a budgetary and programmatic perspective, it is wiser to downsize and align the Department—our current direction. The Department's several essential and critical missions must be performed regardless of whether they are lodged with the Department or spread among a variety of other agencies. Dismantlement by itself will not produce significant budget savings. A program moved to another agency will still require management and administrative support, and inefficiencies are inevitable due to program disruption. Significant savings can only come from cutting programs or privatizing functions. In reviewing the 1982 Reagan Administration proposal to eliminate the Department of Energy, then Senate Energy Committee Chairman James McClure (R-ID) reached this conclusion. The Congressional Budget Office, which also attempted to validate cost savings from dismantlement of the Department of Energy, made the following fundamental observation:

> "Reorganization, by itself, is unlikely to result in significant budgetary savings... At least $3 million in annual savings would be achieved solely by the reorganization... (but these) will be offset by additional administrative and logistical costs... As a result, the net impact on the budget will be small."

This assessment is as true today as it was then. Moving organizational boxes around and distributing functions among agencies does not, in itself, yield budget savings. The Clinton Administration reached this conclusion in December 1994, when it gave a hard look at the suggestion of dismantling the Department of Energy, and possibly other Departments and agencies as well. In the end, it concluded that the proper focus of debate should not be on the number of Cabinet agencies in the Executive Branch or on notions of reducing this number to demonstrate a political point. Rather, the focus must be on questions such as: What functions of Executive Branch Departments must continue to be performed to meet public needs? Which functions can be downsized, privatized or eliminated? And how can enduring Government programs and services be performed in a more cost-effective fashion?

Addressing questions such as these is a far better way to meet cost-cutting goals than through the transfer of the Department's functions to other agencies.

The Department of Energy continues to perform vital functions for the nation. For example, more than 60 percent of the Department's FY 1996 budget will be used to maintain the Nation's nuclear weapons stockpile and to clean up weapons production sites. This work is extremely important to the security interests of the Nation, and to the quality of life of Americans living near former weapons production sites. Similarly, the work of the Department and its laboratories--often in collaboration with industry--to develop new energy technologies is of critical importance to the long-term interests of the nation. The recently completed Galvin Task Force report on the Alternative Futures of the DOE Laboratories strongly urged the Department and its laboratories to maintain and strengthen their focus on the long-term energy needs of our nation and the world. The Galvin Task Force also concluded that the work of the Department of Energy laboratories in fundamental science "is part of an essential, fundamental cornerstone for continuing leadership by the United States."

The Department's highest priorities are: to continue to provide the nation with excellence in science and technology; to manage the change in national defense requirements while maintaining confidence in the existing weapons stockpile in the absence of weapons testing; to reduce the danger of nuclear weapons proliferation; to address the urgent risks of the Cold War's environmental legacy; protect the safety and health of the public and our workers in and around our weapons sites; to help bring clean, efficient, and reliable energy technologies to the domestic and global marketplaces; to continue to address energy security concerns through maintenance of the Strategic Petroleum Reserve, participation in the International Energy Agency, and development of long-term energy supply and demand policies and technologies; to work to resolve the nation's energy resource concerns in areas including nuclear power plant designs, management of radioactive waste, domestic oil and gas extraction, Naval Petroleum Reserves, isotopes, and uranium enrichment; and to work with our industrial partners to improve the nation's energy and economic productivity through research and development. An equally high priority is to improve our own business practices, so that the Department will achieve more with less.

We believe that the primary functions of the Department serve important public purposes, but that they can be done better for less cost. We also believe that some functions of the Department should be downsized, privatized, or eliminated. This is the philosophy behind our announced plan to reduce the Department's budget by $10.4 billion over the next five years ($14.1 billion if one includes the proposed sale of the Power Marketing Administrations, excluding the Bonneville Power Administration).

Our Strategic Alignment initiative will play a major role in securing these savings. If the Department of Energy were dismantled and its functions were transferred to other agencies, we believe that opportunities to implement management efficiencies and to fundamentally improve the operation of these programs could be lost. Political points might be gained through dismantlement and distribution of the Department of Energy, but the goal of deficit reduction would not likely be served. We have a better way, and we urge that you support us in this historic effort to create a new, more effective Department of Energy.

GENERAL

Question: Last month at a forum sponsored by the USGS one of the panelists suggested that we can and should move to an economy fueled totally by renewable energy and that we should encourage developing nations to totally skip fossil fuels and move into renewable. Based on your extensive travels to some of these lesser developed countries could you comment on that -- is that scenario at all realistic?

Answer: We do not suggest that the US, or developing nations, or any nation, peremptorily adopt policies that limit energy choices to renewable systems. Clearly, for the US and for virtually every other area of the world, meeting energy needs will require a mixture of energy sources for a considerable period into the future. There are benefits, we believe, for developing nations to use as high a renewables fraction in their energy mixture as is economically and environmentally justified, including a reflection of benefits relating to sustainable support for economic growth and avoidance of import dependencies.

Prioritization of Proposed FY 1995 Rescissions

Question: If you were given an opportunity to prioritize our proposed rescissions, all of which I know you have officially objected to, what would be your highest priority programs to protect?

Answer: I believe the Department has a balanced energy program in fiscal 1995. Any rescissions this late in the fiscal year will have a compound effect far beyond the face value of the rescission. Many initiatives may have to be discontinued as opposed to merely scaled down. These programs are planned to be continued into fiscal 1996 and for the most part, form the base upon which our request for fiscal 1996 is built. The Administration strongly supports those programs that support climate change activities and clean car initiatives, as well as those in which we have encouraged and invited private industry to join with the Department in partnership in selected areas and technologies. Continuation of these partnerships will enable the Government to withdraw from these areas in the near future leaving a mature technology. These would be our top priorities.

Strategic Petroleum Reserve

Question: As I view your budget it has about a $100 million shortfall for the Strategic Petroleum Reserve as it assumes legislation will be enacted authorizing the use of proceeds from the sale of SPR oil for on-going life extension activities. If that authority is not forthcoming and it does not appear likely, how do you intend to make up the shortfall? Would you consider submitting a budget amendment requesting the additional $100 million be appropriated?

Answer: The Department's budget is dependent upon the sale of oil to generate $100 million in revenue. No contingency plan has been developed to provide the Strategic Petroleum Reserve with funds in the event that the oil sale is not authorized. If the Congress does not act upon the sales authorization request, funding for the Strategic Petroleum Reserve would then have to be appropriated at the expense of other Department activities. The Administration would not consider submitting a budget amendment that would increase the Department's overall budget request by $100 million.

Question: If the necessary authority is not provided to use proceeds from the sale of SPR oil what is the impact on the facilities if your budget is approved as is?

Answer: A budget cut of $100 million would imply a substantial reduction of mission readiness and capability. Rather than being able to assure drawdown with 15 days notice, readiness would require 150 days notice. Security would be downgraded to below a national security facility level, causing the program to accept a higher level of risk at all sites. Over time, maintenance costs would rise because all new activities within the Life Extension Program would be curtailed. The program would also consider closing the Bayou Choctaw, Louisiana site, and consolidating its inventory into the Big Hill Texas site. The entire Capline complex would then be decommissioned, with an attendant loss of initial drawdown and distribution capability of 500,000 barrels per day.

Question: Is there a potential threat to the resources and/or the environment of delaying life extension activities at the SPR? Is there such a threat to not proceeding with the oil removal and decommissioning activities at Weeks Island?

Answer: The primary results of delaying life extension activities at the Strategic Petroleum Reserve would be the deterioration and possible failure of major systems during drawdown, and increasing maintenance costs. There is no significant threat to the oil resources or the environment from delaying life extension activities. A delay in planned oil removal and decommissioning activities would increase the risk of oil loss and resultant environmental damage.

Question: What specifically would not be accomplished at the SPR if your budget is approved as is and the $100 million from the sale of SPR oil is not made available?

Answer: The Reserve would reduce the number of employees associated with maintenance and operations by about 300, which would increase the backlog of maintenance items several fold. It would result in the lengthening of notice to be ready to drawdown to 150 days versus 15 days. The Reserve would reduce the number of security guards by 1/3. Life Extension Projects under construction would be completed; all other Life Extension activity would be stopped. Plans would be drawn up to consolidate the oil inventory at the Texoma and Seaway Complexes and to decommission Bayou Choctaw and the rest of the Capline Complex.

Question: Do you believe there is still a compelling need for the SPR or have you considered some disposal of the facility as has been considered for the Power Marketing administrations and the NPR?

Answer: The reasons supporting the creation of the Strategic Petroleum are equally as valid as they were 20 years ago. If anything, the demise of the Soviet Union, the rise of Islamic militancy, and explosive economic growth in Asia have created as much or more uncertainty and danger of energy supply emergencies as the Organization of Petroleum Exporting Countries posed in the 1970s. The Department is not considering disposal of the Strategic Petroleum Reserve.

QUESTIONS SUBMITTED BY CHAIRMAN RALPH REGULA

Naval Petroleum Reserves

Question: The law requires the NPR to operate at the maximum efficient rate (MER). Does this budget allow you to operate at MER and what are the legal implications of not doing so?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. Only if it is determined that the minimum sales price as established by criteria set forth in that statute will not be met, would a Government corporation be established for operation of the Reserves. Preliminary analysis indicates that new, incremental administrative costs associated with the formation of the corporation would be incurred. These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A complete analysis of start-up costs is being prepared as part of a Business Plan for the corporation, which is expected to be completed by late May 1995.

Question: It has been suggested by some, including GAO, that DOE be allowed to set the rate of production in a way that maximizes profits without regard to MER. Do you support setting aside the MER requirement?

Answer: An independent panel of petroleum industry experts that studied Elk Hills operations in 1993 recommended that the concept of MER production be replaced by an operational policy of "maximizing asset value." We enthusiastically supported this recommendation and have included it in legislation which we will be submitting shortly to the Congress to restructure the NPOSR program as a government corporation.

Question: What are the benefits to the taxpayer of your proposed corporatization/sale of NPR?

Answer: A number of alternatives have been examined regarding how best to manage the Naval Petroleum and Oil Shale Reserves so as to maximize their value as an asset to the Nation. To ensure a common basis for comparing the fiscal aspects of these alternatives, a "net present value" (NPV) analysis was done to compress projected out-year revenues from alternative management schemes into one number which can then be readily compared to the NPVs of other management options. Our analyses indicate that the management plan proposed for the Reserves in the FY 1996 Budget--corporatization followed by sale by the end of FY 1997--would yield the largest NPV to the Government of the divestiture alternatives examined if the sale price is $2.6 billion. Based upon our examination of industry practices and reported sales of other oil fields, this figure is within the range of prices that we believe are feasible, although it is at the upper end of this range. Corporatization without a sale would, however, yield a larger NPV to the government.

Question: If Congress does not approve the proposed corporatization and sale and only provides the requested caretaker budget, would there by any detrimental effects on the oil field both in the long term and the short term? In other words does approving this budget in any way put the resources at risk?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. Only if it is determined that the minimum sales price as established by criteria set forth in that statute will not be met, would a Government corporation be established for operation of the Reserves. Preliminary analysis indicates that new, incremental administrative costs associated with the formation of the corporation would be incurred. These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A complete analysis of start-up costs is being prepared as part of a Business Plan for the corporation, which is expected to be completed by late May 1995.

Energy Policy Act Section 2306

Question: As you are aware, Section 2306 of the Energy Policy Act outlines limits on companies eligibility for financial assistance in certain DOE programs; based principally on whether the company is a U.S. company or has a parent company which grants reciprocity to U.S. companies. There has been some confusion as to how the Department is interpreting this provision of the Act and the impact this provision is having on ongoing procurement efforts. Could you comment on the Department's interpretation of this section of the law? Has a final rule on section 2306 been issued and if not what is the status of the rulemaking?

Answer: Section 2306 of the Energy Policy Act of 1992 (EPAct) imposes eligibility requirements on the receipt of financial assistance by all companies, U.S.-owned and foreign-owned, under the Department's research and development (R&D) programs covered by Titles XX through XXIII of that Act.

On February 23, 1995, the Department issued in the Federal Register (60 Fed. Reg. 10296) (copy enclosed) a proposed general statement of policy, including procedures and interpretations, to guide DOE officials in making eligibility determinations required by section 2306 of EPAct. As noted in the proposed rulemaking, section 2306 does not require the Department to conduct a rulemaking. However, DOE has chosen to publish a proposed general statement of policy in the Federal Register through notice and comment rulemaking in order to ensure a full opportunity for public comment and input prior to finalizing the policy.

Written comments on the proposed general statement of policy implementing the requirements of section 2306 are due on or before April 24, 1995. Once comments are reviewed, the Department will issue a final rule for the implementation of section 2306, to be codified as a new Subpart F of 10 CFR 600 of DOE's Financial Assistance Rules.

Question: What impact has this statute had on the Department's procurement practices and has this statute resulted in any changes in planned contract awards?

Answer: Following an initial period of delay due, in part, to the need to resolve implementation issues, the Department has been able to implement section 2306 with a minimum of delay and without any changes in planned contract awards. It should also be noted that the Department's proposed general statement of policy on section 2306 recently published in the Federal Register invites comment on several initiatives which are intended to further reduce the administrative burdens of complying with the Act.

DEPARTMENT OF ENERGY

Office of Policy

10 CFR Part 600

[Docket No. PO–RM–95–101]

Financial Assistance Rules: Eligibility Determination for Certain Financial Assistance Programs

AGENCY: Department of Energy.

ACTION: Notice of proposed rulemaking and public hearing.

SUMMARY: The Department of Energy (Department or DOE) today gives notice of a proposed general statement of policy to guide DOE officials in making eligibility determinations required by section 2306 of the Energy Policy Act of 1992. The proposed general statement of policy includes procedures and interpretations related to the statutory limits placed by section 2306 on eligibility to receive financial assistance under DOE programs authorized by Titles XX through XXIII of that Act.

DATES: Written comments (9 copies) must be received by DOE on or before April 24, 1995. A public hearing will be held on April 19, 1995 beginning at 9:30 a.m. at the address listed below. Requests to speak must be received by April 17, 1995, by calling (202) 586–3012.

ADDRESSES: Written comments and requests to speak must be submitted to: Dr. Robert C. Marlay, Office of Science Policy, Office of Policy, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, D.C. 20585, (202) 586–3012.

Telecopied comments will not be accepted. The public hearing will be held in Room 1E–245, U.S Department of Energy, 1000 Independence Avenue SW., Washington, D.C. 20585. See Section V. for additional information concerning public comment procedures.

FOR FURTHER INFORMATION CONTACT: Dr. Robert C. Marlay, Office of Science Policy (Mail Stop PO–81), Office of Policy, U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, D.C. 20585, (202) 586–3900. Paul Sherry, Esq., Office of General Counsel (Mail Stop GC–61), U.S. Department of Energy, 1000 Independence Avenue SW., Washington, D.C. 20585, (202) 586–2440.

SUPPLEMENTARY INFORMATION:

I. Background

This notice sets forth a proposed general statement of policy, including procedures and interpretations, concerning implementation of the requirements of section 2306 of the Energy Policy Act of 1992 (EPAct) (42 U.S.C. 13525). The general statement of policy, when finalized, will guide implementing DOE officials in making a special eligibility determination prerequisite to a financial assistance award to a company under Titles XX through XXIII of EPAct. Those titles relate to research, development, demonstration and commercialization programs in diverse areas of energy efficiency, energy supply, and related basic research.

The Department has decided to adopt a general statement of policy and to codify that policy in the part of the Code of Federal Regulations containing the Department's financial assistance regulations. Such a codified policy statement is needed to communicate guidance on these implementation issues to Departmental officials and potential DOE program applicants. This policy statement applies only to DOE's implementation of section 2306 of EPAct; it is not intended to apply to any other agency or to the implementation of any other statutory eligibility requirement.

The eligibility restrictions addressed in this policy statement apply to a broad range of DOE programs (see list of covered programs below), many of which pre-dated enactment of EPAct. These programs are conducted by a large number of program and contracting officials located in regional and field offices as well as DOE headquarters. This policy statement provides uniform guidance for DOE officials and for applicants to the broad array of covered programs.

Section 2306 does not require the Department to conduct a rulemaking. Further, notice and comment rulemaking is not required by law for general statements of policy. However, DOE has chosen to publish the proposed general statement of policy in the **Federal Register** in order to ensure a full opportunity for public comment and input prior to finalizing the policy.

Section 2306 provides for a two-part determination. An applicant must be found to satisfy the conditions of both parts in order to be eligible.

The first part, set out in section 2306(1), involves a finding with regard to whether an award to the applicant would be in the economic interest of the United States. 42 U.S.C. 13525(1). The statute provides some illustrative examples of the kinds of evidence that would support such a finding: Investments in the United States in research, development, and manufacturing; significant contributions to employment in the United States; and agreements, with respect to any technology arising from financial assistance provided, to promote the manufacture within the United States of products resulting from that technology and to procure parts and materials for such manufacture from competitive suppliers.

The second part of the determination, section 2306(2), involves two subparts, one of which must be satisfied. 42 U.S.C. 13525(2). The first subpart is satisfied if the applicant is a "United States-owned company." The second subpart is satisfied if the applicant is found to be incorporated in the United States and the applicant's parent company is incorporated in a foreign country that: (a) Affords opportunities to United States-owned companies comparable to those afforded to any other company with regard to access to government-supported joint ventures in energy research and development. (b) affords opportunities to United States-owned companies comparable to those afforded to any other company with regard to general investment opportunities; and (c) affords adequate and effective protection to intellectual property rights owned by United States-owned companies.

None of the statutory terms used in section 2306 is defined by EPAct, and the legislative history sheds no light on the intended meaning of such terms. Consequently, the Department's proposed interpretations are based on the common usage of these terms, as informed by their usage in similar contexts.

The Department is of the view that the proposed general statement of policy sets forth a reasonable decisionmaking framework for the guidance of implementing officials. If any of the provisions of the policy would be unreasonable as applied, those officials would have the discretion to depart from its terms based upon particular facts and circumstances. Department officials must, in all cases, comply with the requirements of the statute.

II. Applicability of Eligibility Requirements

Section 2306's eligibility requirements apply to applicants for "financial assistance under Titles XX through XXIII of this Act." 42 U.S.C. 13525. EPAct does not define "financial assistance." Consistent with the Federal Grant and Cooperative Agreement Act of 1977, 31 U.S.C. 6301–6308, and the practices of other Executive agencies, DOE currently defines financial assistance instruments to include grants and cooperative agreements, but not contracts and subcontracts. 10 CFR 600.3 ("financial assistance instruments are grants and cooperative agreements and subawards"). Contracts and subcontracts do not constitute financial assistance but instead provide for payment in exchange for procured products or services. *See* 31 U.S.C. 6303. Thus, the Department concludes that contracts and subcontracts, including cost-shared contracts and subcontracts, fall outside the scope of financial assistance and does not propose modifying the current definition of financial assistance in 10 CFR 600.3 for purposes of this subpart.

The Department's current definition of financial assistance also excludes cooperative research and development agreements (CRADAs). The Stevenson-Wydler Technology Innovation Act, 15 U.S.C. 3710a, which authorizes the use of CRADAs, does not authorize the transfer of funds to a CRADA participant and specifically distinguishes CRADAs from cooperative agreements. Thus any assistance provided under CRADAs would not be "financial" assistance as the term ordinarily is understood. We note as well that existing law governing the use of CRADAs contains a set of considerations for the selection of CRADA participants that address similar policy objectives. 15 U.S.C. 3710a(c)(4).

Section 2306 applies to financial assistance "under Titles XX through XXIII" of EPAct. The intended affect of this statutory phrase is ambiguous. The Department proposes to interpret the range of activities covered by section 2306 to include all Department of Energy research and development programs either mentioned specifically in the text of Titles XX through XXIII or suggested by references to similar and related research and development activities in the conference reports on the Appropriations Acts for Energy and Water Development and for Interior and Related Agencies. This includes many programs and program activities that were initiated prior to the enactment of EPAct under authority of pre-existing law. Thus, for many programs, there are now two or more authorities. Comment is requested on this interpretation.

A list of covered programs for fiscal year 1995 (FY95) is set forth in the discussion of the term "covered program" in section III below. This list will be updated each fiscal year and published in the **Federal Register** to account for changes in appropriated activities undertaken under Titles XX through XXIII of EPAct.

III. Section-By-Section Analysis

Today's proposed policy statement would be codified as a new subpart F in 10 CFR part 600 where the Department's general financial assistance regulations are codified. The following is a discussion of the new sections that would make up subpart F.

§ 600.500 Purpose and scope.

This section states that the subpart provides procedures and interpretations to guide DOE officials in making eligibility determinations under section 2306 of the EPAct.

§ 600.501 Definitions.

The definition section begins by alerting readers that the existing definitions in § 600.3 of the general subpart are applicable to the new subpart F. Section 600.3 contains definitions of "applicant," "cooperative agreement," "financial assistance," "grant," and "State."

The term "company" is defined to mean any for-profit business entity. The eligibility requirements of section 2306 would apply only to companies. This definition, based on common usage of the term company, is intended to include for-profit corporations, general or limited partnerships, sole proprietorships, and other forms of business entities. It is also intended to cover joint ventures involving one or more such entities. The definition does not include governmental entities, and thus such entities would not be subject to this restriction on eligibility to receive financial assistance. Moreover, the definition does not include non-profit organizations. The Department invites comment on whether it is appropriate to exclude all non-profit organizations from this definition, or whether it would be more appropriate to exclude a narrower class of educational and charitable organizations, such as organizations exempted from Federal income tax under section 501(c)(3) of the Internal Revenue Code.

The term "covered program" is defined in order to have a convenient term for referring to the list of activities under Titles XX through XXIII of the Energy Policy Act of 1992 to which the section 2306 eligibility restrictions apply. Set out below is the proposed list of covered programs for FY95:

COVERED PROGRAMS—FY 95

Fossil energy R & D	EPACT sections
Petroleum:	
All Programs	§ 2011, 2012
Gas:	
Natural Gas Research	§ 2013–2015, 2112
All programs, including:	
Resource & Extraction	§ 2013, 2014
Delivery & Storage	§ 2013, 2014
Utilization	§ 2013, 2014
Turbines	§ 2112
Environmental Research & Regulatory Analysis.	§ 2013, 2014
Midcontinent Energy Research Center.	§ 2013, 2015
Fuel cells:	§ 2115
All Programs, including:	
Advanced Research	§ 2115
Molten Carbonate Systems.	§ 2115
Advanced Concepts	§ 2115
Energy conservation:	
Transportation	§ 2021–2025, 2027, 2028, 2112
Alternative Fuels Utilization.	§ 2021, 2023
Materials Development	§ 2021
Heat Engine Development	§ 2021, 2112
Electric & Hybrid Propulsion Development.	§ 2021, 2025
Implementation & Deployment.	§ 2021
Management	§ 2021
Capital Equipment	§ 2021
Advanced Automotive Fuel Economy.	§ 2021, 2022
Biofuels User Facility	§ 2021, 2024
Advanced Diesel Emissions Program.	§ 2021, 2027
Telecommuting Study	§ 2021, 2028
Utility:	§ 2101
All programs.	
Industry	§ 2101–2108
All Programs, Including:	
Industrial Wastes	§ 2101
Municipal Solid Wastes	§ 2101
Cogeneration	§ 2101
Electric Drives	§ 2101, 2105
Materials and Metals Processing.	§ 2101, 2107
Other Process Efficiency.	§ 2101
Process Heating & Cooling.	§ 2101, 2102
Implementation & Deployment.	§ 2101
Management	§ 2101
Capital Equipment	§ 2101
National Advanced Manufacturing Tech Initiative.	§ 2101, 2202
Pulp & Paper	§ 2101, 2103
Steel, Aluminum, and Metal Research.	§ 2101, 2106
Energy Efficient Environmental Program.	§ 2101, 2108
Buildings	§ 2101–2108
All Programs, including:	
Federal Energy Management Program.	§ 2101
Implementation & Deployment.	§ 2101

COVERED PROGRAMS—FY 95—Continued

Fossil energy R & D	EPACT sections
Management and Planning.	§2101
Capital Equipment	§2101
Advanced Buildings for 2005.	§2101, 2104
Building Systems	§2101
Building Envelope	§2101
Building Equipment	§2101
Codes and Standards	§2101
Energy Supply R & D	
Energy Research	
Fusion Energy	§2114
All Programs, including:	
Confinement Systems.	§2114
Development & Technology.	§2114
Applied Plasma Physics.	§2114
Planning & Projects.	§2114
Inertial Fusion Energy.	§2114
Program Direction-Op Exp.	§2114
Capital Equipment & Construction.	§2114
Basic Energy Sciences	§2203
All Activities, including: Materials Sciences.	§2203
Chemical Sciences.	§2203
Energy Biosciences.	§2203
Engineering & Geosciences.	§2203
Applied Math Sciences.	§2203, 2204
Advanced Energy Projects.	§2203
Program Direction.	§2203
Capital Equipment.	§2203
Advisory & Oversight/Program Direction.	§2203
Advanced Neutron Source §2203	
Energy Research Analysis	§2203
University & Science Education Programs.	§2203
Experimental Program to Stimulate Competitive Research.	§2203
Laboratory Technology Transfer.	§2203
Multi-Program Laboratory Support.	§2203
Nuclear Energy:	
Light Water Reactor	§2123, 2126
Advanced Reactor R & D	§2121, 2122, 2124, 2126
Facilities	§2126
Solar & Renewables:	
Solar & Other Energy	§2021, 2026, 2111, 2117
All Programs, including:	
Photovoltaics	§2111
Biofuels	§2021, 2013, 2024, 2111
Solar Technology Transfer.	§2111
Program Direction—Other Solar Energy.	§2111
Solar Building Technology Research.	§2111, 2104
Solar Thermal Energy Systems.	§2111
Wind Energy Systems	§2111
Ocean Energy Systems	§2111
International Solar Energy Program.	§2111
Resource Assessment	§2111
Program Support	§2111
Geothermal	§2111
Hydrogen Research	§2026
Electric Energy Systems including: Superconductivity.	§2117, 2111
Energy Storage Systems	§2111
Environmental Rest & Waste Management:	
Facility Transition—Fast Flux Test Facility.	§2116
Civilian Waste R & D	§2113
Electric & Magnetic Fields Research and Public Dissemination Program.	§2118
Spark M. Matsunaga Renewable Energy & Ocean Technology Center.	§2111, 2119

The term "parent company" is defined as a company that exercises ultimate ownership of the applicant company. The parent company would be identified by first determining whether any company owns a majority of the applicant company's voting securities. If so, then the same test would be applied to that company, *i.e.*, does any company own a majority of that company's voting securities? The parent company would be the company that exercises control over the applicant company by means of this chain of majority stock ownership, and which itself is not subject to the majority stock ownership of any other company.

DOE would interpret the term "parent company" to mean the ultimate parent company as just described in order to avoid confusion in cases where an applicant company and its immediate parent are both organized in the U.S., but where the immediate parent is, in turn, owned by a company organized abroad.

The Department recognizes that there may be situations in which one company effectively controls the actions of another without owning a majority of its voting securities. However, given that the sole purpose of this inquiry into corporate lineage would be to identify the foreign country with which a non-U.S.-owned applicant can be most directly associated, this approach is felt to be both adequate and appropriate.

The definition of "United States" is a standard definition used in many of the Department's programs. It includes the 50 States, the District of Columbia, and all commonwealths, territories and possessions of the United States.

The term "United States-owned company" is a key part of section 2306(2). The Department proposes to permit an applicant to use either of two alternative definitions of this term: (1) A company that has majority ownership by individuals who are citizens of the United States, or (2) a company organized under the laws of a State that either has no parent company or has an ultimate parent company that is organized under the laws of a State.

The first alternative is based on the statutory definition of the term "United States-owned company" used in a similar eligibility limitation, which defines United States-owned company in terms of majority ownership or control by citizens of the United States. 15 U.S.C. 278n(j)(2). This test of ownership is based on the citizenship of individual owners or shareholders. Where an applicant company is a wholly- or majority-owned subsidiary of a parent company, or a majority of its stock is held by other corporations or institutional investors rather than individuals, the ownership analysis would be applied to these corporations or institutional investors to determine whether they are owned by individuals who are citizens of the United States.

The second alternative definition of United States-owned company is a company organized under the laws of a State that either has no parent company or has an ultimate parent organized under the laws of a State. This alternative is based on a presumption that companies incorporated or organized in the U.S. that are not majority-owned by a foreign company will not have sufficiently strong connection to any foreign country to justify using the section 2306(2)(B) reciprocity determinations. The Department will request applicants claiming to be U.S.-owned companies to make a certification to that effect.

The term "voting security," which is used in the definition of parent company, is defined by reference to the statutory definition in the Public Utility Holding Company Act. 15 U.S.C. 15b(17). This broad definition includes any security that gives the holder a vote in the direction or management of the company, such as common stock in a corporation and partnership interests in a partnership.

§ 600.502 What DOE Must Determine

This section follows the sequence of provisions of section 2306 which provide for the two mandatory elements of the eligibility determination. The first mandatory element is a finding that the applicant's participation in a particular program is in the economic interest of the United States. The second mandatory element has two alternative subparts—either (a) the company is a U.S.-owned company; or (b) the company is found to be incorporated in the U.S. and the government of the parent company's country of incorporation affords U.S.-owned companies local investment opportunities comparable to those offered to any other company on investment and access to energy research and development, and protects U.S.-owned intellectual property in that country.

In order to avoid seemingly unintended consequences in interpreting section 2306(2)(B), the Department proposes interpreting the statutory phrase "company * * * incorporated in the United States" to include both corporations incorporated in the U.S. and other companies, defined as for-profit business entities, organized under the laws of any State in the U.S. Thus, for example, a partnership organized under State law in the U.S. would be included. Similarly, the Department proposes interpreting the statutory phrase "parent company which is incorporated" in a foreign country to include both corporations and other for-profit business entities organized under foreign law.

The Department invites comment on how to make the required determination in the context of relatively small financial assistance awards. Under the proposed rule, all applicants would need to submit the same types of information and the Department would undertake the same type of determination. One possible alternative is to ask applicants for awards below $100,000 to certify that they satisfy all the eligibility requirements of section 2306(1) and (2)(a), if applicable, and to rely on such a certification unless the Department has reason to believe that further investigation is warranted. This approach would permit the Department to target its administrative resources to making eligibility determinations for larger awards, and at the same time preserve the Department's appropriate role in reviewing eligibility for smaller awards where there is reason to question an applicant's eligibility. The Department invites comment on such an alternative for small awards.

§ 600.503 Determining the economic interest of the United States.

This section provides guidelines as to information that may support an affirmative determination that a financial assistance award would be in the economic interest of the United States. Section 600.503 describes examples, based on the statute, of the type of evidence that may be considered. Section 600.503 of the general statement of policy makes it clear that any other evidence that shows that an award would be in the economic interest of the United States can be considered. Determinations concerning the economic interest of the United States will be based on consideration of all available evidence.

The evidence to be considered concerning investments or employment in the U.S. may include evidence related to affiliates of the applicant company (e.g., the parent company of an applicant corporation, the general partners in an applicant partnership). DOE will consider the facts relating to each applicant in context.

Where the applicant for financial assistance is a joint venture, DOE would apply the economic interest test of section 2306(1) to the joint venture as a whole. Under section 2306(2), however, DOE would apply the relevant tests to each company participating in the joint venture.

In evaluating whether an applicant's participation is in the economic interest of the United States, DOE may consider the activities of the applicant's contractors or suppliers or other companies that would have a significant role in the government-supported work. In determining which contractors, suppliers or other companies may be considered in assessing an applicant's eligibility, DOE would consider whether the company's participation is a factor advanced by the applicant for consideration in evaluating the merits of the application. For example, where an applicant chooses to rely on the qualifications of named component suppliers or other contractors in making an application to a covered program, the activities of any such named contractors or suppliers may be evaluated in determining whether the applicant's participation is in the economic interest of the United States.

§ 600.504 Information an applicant must submit.

This section makes clear that the burden of producing information to support an affirmative determination concerning the economic interest of the United States and the ownership status of the applicant would rest on the applicant. The allocation of this burden to the applicant is appropriate because the applicant will usually be in the best position to provide relevant information. The Department may request that information needed to make an eligibility determination be submitted with the application for financial assistance, or may specify, in the solicitation, a later stage in the process for submission of such information.

If an applicant for financial assistance proposes to demonstrate that an award is in the economic interest of the United States by asserting that it will undertake future action, such as promoting manufacture of products in the United States or procuring parts and materials from competitive suppliers, DOE will require it to provide an appropriate certification concerning such future action. In support of such certifications, the applicant should also provide a brief commercialization plan for the technology that is expected to result from the program-supported research and development. The Department expects to give considerable weight to these plans in assessing whether the applicant's participation is in the economic interest of the United States.

In order to be treated as a "United States-owned company" for eligibility purposes, an applicant would be required to submit an appropriate certification that it satisfies the definition in § 600.501.

The section concludes with a paragraph providing for DOE requests for information in addition to that submitted with the application for financial assistance, if necessary.

§ 600.505 Other information DOE may consider.

This section identifies certain kinds of information, in addition to the information provided by the applicant, that may be relevant in making the required findings. DOE, in making the findings required under section 2306(2)(B), intends to consult with and seek information from a number of sources, including, but not limited to, appropriate agencies of the federal government as well as publicly available information.

With respect to whether a foreign government "affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those authorized by the Act," DOE expects to consider the regime that governs eligibility of U.S.-owned companies seeking to participate in research and development sponsored by that government.

The DOE analysis of this issue would consider discrimination against foreign subsidiaries of U.S.-owned companies relative to any other company in providing access to research and development programs. DOE would consider both discriminatory policies and discriminatory practices. Where a foreign government does not have research and development programs comparable to those authorized by EPAct, the absence of such programs would not preclude companies headquartered in that country from participating in DOE programs.

The statutory phrase "joint venture similar to those authorized under this Act" has uncertain meaning given that EPAct authorizes a number of government-supported programs, but the Department has not, to date, used joint ventures per se. Given the apparent intent of the statute to promote opportunities comparable to those afforded to any other company in energy research and development programs, DOE would construe this phrase to mean government-supported research and development programs similar to those covered by section 2306.

With regard to whether a foreign country "affords to United States-owned companies local investment opportunities comparable to those afforded to any other company," DOE expects to consider a review of applicable international obligations to provide to U.S. investors opportunities comparable to those offered to other companies.

With regard to protection of intellectual property rights in foreign countries, DOE expects to consider certain lists that contain relevant information prepared by other Executive agencies, such as the "Special 301 Priority Foreign Country List," issued by the U.S. Trade Representative.

In making the determinations required under section 2306(2)(B), the Department expects to seek the advice of other appropriate federal agencies.

IV. Procedural Requirements

A. Review Under Executive Order 12866

Today's regulatory action has been determined to be a "significant regulatory action" under Executive Order 12866, "Regulatory Planning and Review," 58 FR 51735 (October 4, 1993). Accordingly, today's action was reviewed by the Office of Information and Regulatory Affairs.

The draft of today's action and any other documents submitted to OIRA for review have been made a part of the rulemaking record and are available for public review as provided in the ADDRESSES section of this notice.

B. Review Under Paperwork Reduction Act

No new information collection requirements subject to the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, are imposed by today's regulatory action.

C. Review Under the National Environmental Policy Act

Pursuant to the Council on Environmental Quality Regulations (40 CFR parts 1500–1508), the Department of Energy has established regulations for its compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*). Pursuant to appendix A of subpart D of 10 CFR part 1021, the Department has determined that today's regulatory action is categorically exempt as a procedural rule for implementation of statutory requirements.

D. Review Under Executive Order 12612

Executive Order 12612, 52 FR 41685 (October 30, 1987), requires that rules be reviewed for any substantial direct effect on States, on the relationship between the National Government and the States, or in the distribution of power and responsibilities among various levels of government. If there are sufficient substantial direct effects, then the Executive Order requires preparation of a federalism assessment to be used in all decisions involved in promulgating and implementing a policy action. Today's action interprets the section 2306 eligibility requirements to be inapplicable to State applications for financial assistance. Therefore, the Department has determined that they will not have a substantial direct effect on the institutional interests or traditional functions of States.

E. Review Under Executive Order 12778

Section 2 of Executive Order 12778 instructs each agency to adhere to certain requirements in promulgating new regulations. These requirements, set forth in section 2(a) and (b)(2), include eliminating drafting errors and needless ambiguity, drafting the regulations to minimize litigation, providing clear and certain legal standards for affected legal conduct, and promoting simplification and burden reduction. Agencies are also instructed to make every reasonable effort to ensure that regulations define key terms and are clear on such matters as exhaustion of administrative remedies and preemption. The Department certifies that today's regulatory action meets the requirements of section 2(a) and (b)(2) of Executive Order 12778.

V. Opportunity for Public Comment

A. Written Comments

Interested persons are invited to participate in this proceeding by submitting data, views, or comments with respect to today's notice.

Nine copies of written comments should be submitted to the address indicated in ADDRESSES section of this notice. Comments should be identified on the outside of the envelope and on the documents themselves with the designation "Financial Assistance Rules: Eligibility Determination for Certain Financial Assistance Programs, Docket No. PO-RM-95-101." In the event any person wishing to provide written comments cannot provide nine copies, alternative arrangements can be made in advance with the Department.

All comments received will be available for public inspection as part of the administrative record on file for this rulemaking in the Department of Energy Freedom of Information Office Reading Room, 1E-090, Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C. 20585, 202-586-6020, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

Any person submitting information which that person believes to be confidential and which may be exempt by law from public disclosure, should submit one complete copy, as well as two copies from which the information claimed to be confidential has been deleted. The Department reserves the right to determine the confidential status of the information and to treat it accordingly under 10 CFR 1004.11.

B. Public Hearing

One public hearing will be held pursuant to this notice at the time, date and place indicated above in the DATES and ADDRESSES sections of this notice. Any person who has an interest in making an oral presentation should make a written request to speak. Such a request should be sent to the address given in the ADDRESSES section of this notice and must be received by 4:30 p.m. on the date specified in the DATES section. The person also should provide a daytime phone number where the person may be reached. Those persons requesting an opportunity to make an oral presentation should bring nine (9) copies of their statement to the hearing.

DOE will establish the procedures governing the conduct of the hearing. The length of each presentation will be limited to ten (10) minutes. A DOE official will preside at the hearing, and may ask questions. Any further procedural rules needed for the proper conduct of the hearing will be announced by the presiding officer.

If DOE must cancel the hearing, DOE will make every effort to give advance notice of the cancellation. The hearing may be cancelled in the event no requests to speak are received by the deadline for submission of such a request.

List of Subjects in 10 CFR Part 600

Administrative practice and procedure, Grant programs.

Issued in Washington, D C., on this 17th day of February 1995.

Susan F. Tierney,

Assistant Secretary, Policy, Planning, and Program Management.

For the reasons stated in the preamble, part 600 of title 10, Subchapter H of the Code of Federal Regulations is proposed to be amended as set forth below:

Part 600—FINANCIAL ASSISTANCE RULES

1. The authority citation for part 600 continues to read as follows:

Authority: 42 U S.C. 7254, 7256, 31 U.S.C. 6301–6308, unless otherwise noted.

2. New subpart F, consisting of §§ 600.500 through 600.505, is added to read as follows:

Subpart F—Eligibility Determination for Certain Financial Assistance Programs—General Statement of Policy

Sec.
600.500 Purpose and scope.
600.501 Definitions.
600.502 What must DOE determine.
600 503 Determining the economic interest of the United States
600.504 Information an applicant must submit.
600.505 Other information DOE may consider

Subpart F—Eligibility Determination for Certain Financial Assistance Programs—General Statement of Policy

§ 600.500 Purpose and scope.

This subpart implements section 2306 of the Energy Policy Act of 1992, 42 U.S.C. 13525, and sets forth a general statement of policy, including procedures and interpretations, for the guidance of implementing DOE officials in making mandatory pre-award determinations of eligibility for financial assistance under Titles XX through XXIII of that Act.

§ 600.501 Definitions.

The definitions in § 600.3 of this part are applicable to this subpart, and in addition, as used in this subpart:

Act means the Energy Policy Act of 1992.

Company means any for-profit business entity.

Covered program means a program under Titles XX through XXIII of the Act, as listed separately and updated annually by the Department of Energy for each fiscal year.

Parent company means a company that:

(1) Exercises ultimate ownership of the applicant company either directly, by ownership of a majority of that company's voting securities, or indirectly, by control over a majority of that company's voting securities through a series of one or more intermediate subsidiary companies, and

(2) Is not itself subject to the ultimate ownership control of another company.

United States means the several States, the District of Columbia, and all commonwealths, territories, and possessions of the United States.

United States-owned company means:

(1) A company that has majority ownership by individuals who are citizens of the United States, or

(2) A company organized under the laws of a State that either has no parent company or has a parent company organized under the laws of a State.

Voting security has the meaning given the term in the Public Utility Holding Company Act (15 U.S.C. 15b(17)).

§ 600.502 What must DOE determine.

A company shall be eligible to receive financial assistance only if DOE finds that—

(a) Consistent with § 600.503, the company's participation in a covered program would be in the economic interest of the United States; and

(b) The company is either—

(1) A United States-owned company; or

(2) Incorporated or organized under the laws of any State and has a parent company which is incorporated or organized under the laws of a country which—

(i) Affords to the United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those authorized under the Act;

(ii) Affords to United States-owned companies local investment opportunities comparable to those afforded to any other company; and

(iii) Affords adequate and effective protection for the intellectual property rights of United States-owned companies.

§ 600.503 Determining the economic interest of the United States.

In determining whether participation of an applicant company in a covered program would be in the economic interest of the United States under paragraph (a) of § 600.502, DOE may consider any evidence showing that a financial assistance award would be in the economic interest of the United States including, but not limited to—

(a) Investments by the applicant company and its affiliates in the United States in research, development, and manufacturing (including, for example, the manufacture of major components or subassemblies in the United States);

(b) Significant contributions to employment in the United States by the applicant company and its affiliates; and

(c) An agreement by the applicant company, with respect to any technology arising from the financial assistance being sought—

(1) To promote the manufacture within the United States of products resulting from that technology (taking into account the goals of promoting the competitiveness of United States industry); and

(2) To procure parts and materials from competitive suppliers.

§ 600.504 Information an applicant must submit.

(a) Any applicant for financial assistance in a covered program shall submit with the application for financial assistance, or at such later time as may be specified by DOE, evidence for DOE to consider in making findings required under § 600.502(a) and findings concerning ownership status under § 600.502(b).

(b) The applicant for financial assistance has the burden of producing sufficient information to warrant making each required finding under § 600.502.

(c) If an applicant for financial assistance is submitting evidence relating to future undertakings, such as an agreement under paragraph (c) of § 600.503 to promote manufacture in the United States of products resulting from a technology developed with financial assistance or to procure parts and materials from competitive suppliers, the applicant shall submit a certification affirming acceptance of these undertakings. The applicant should also briefly describe its plans, if any, for any manufacturing of products arising from the program-supported research and development, including the location where such manufacturing is expected to occur.

(d) If an applicant for financial assistance is claiming to be a United States-owned company, the applicant must submit a certification affirming that it falls within the definition of that term provided in § 600.501.

(e) DOE may require submission of additional information deemed necessary to make any portion of the determination required by § 600.502

§ 600.505 Other information DOE may consider.

In making the determination under paragraph (b)(2) of § 600.502, DOE may—

(a) consider information on the relevant international and domestic law obligations of the country of incorporation of the parent company of an applicant;

(b) consider information relating to the policies and practices of the country of incorporation of the parent company of an applicant with respect to:

(1) The eligibility criteria for, and the experience of United States-owned company participation in, energy-related research and development programs;

(2) Local investment opportunities afforded to United States-owned companies; and

(3) Protection of intellectual property rights of United States-owned companies;

(c) seek and consider advice from other federal agencies, as appropriate; and

(d) consider any publicly available information in addition to the information provided by the applicant.

[FR Doc. 95–4425 Filed 2–22–95; 8:45 am]

BILLING CODE 6450–01–P

THURSDAY, MARCH 23, 1995.

ENERGY INFORMATION ADMINISTRATION

WITNESS

JAY E. HAKES, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION

Mr. REGULA [presiding]. We'll reconvene the committee.

And we're going to start today, this afternoon, with the Energy Information Administration. Your statement will be made a part of the record, and perhaps you could summarize for us.

OPENING REMARKS

Mr. HAKES. The Energy Information Administration collects and analyzes data and does energy forecasts, basically, for three sets of customers. One very important set of customers is the Government, which are the people who make policy in the energy area, both the Executive branch and the Legislative branch. We also provide this information to the business community, and we provide it to the public. We feel that all of these activities have high value added. It's very difficult to make good policy without good data. It's very hard for energy markets to operate efficiently without good data, and it's very hard for the public to understand what's happening in the energy arena without having good data and credible information. We try to present this information in a policy-neutral way that is very objective, and we feel since 1977, when EIA was founded, that we have done a good job in establishing this credibility.

Our request this year is almost identical to what it was last year, $84.7 million. We have a number of areas where we see needs for improvement. The international area is an important area, the area of independent power producers, the deregulation of the natural gas industry, and nongrid-connected renewables is a very important area for us.

We're trying to provide this in a form where it's widely used by our customers. We are keeping much better customer data than we ever have in the past. We find that many people want our information electronically because they can get it faster that way. One of the nice advantages of this that I think the members of the committee will appreciate is that the people back in their districts can get the information just about as quick as the people here in Washington because it is available electronically, and it has very user-friendly interfaces on it, almost as good as some of the games you see. We like to say our work—we want to make it so interesting and easy to use that our kids want to play with it when we take it home.

But we've also not forgotten the more traditional ways and easy ways the policymakers need information. I see you have some energy information cards over there, which is a product of our office, and we found these have been very helpful for a lot of people in just having access to data.

We calculated that about 150,000 people called in to our National Energy Information Center last year. We are seeing a tremendous escalation in the number of people who are using this electronically. So we feel there's a tremendous market out there for this information and that it is very widely used.

Our goal is that it's useful to large, multi-purpose energy companies, where our goal is also that it be available to reference librarians at every library in the country, so that it's accessible for anybody that wants to use it. That's sort of our vision of our basic responsibilities under our statutes and how we want to operate.

I would add one thing at this point. We, like I believe everyone in Government, are aware that we're certainly in an age of reduced resources. We are undertaking some very serious re-engineering efforts where we believe that, by standardizing some of our survey collection data and by looking at our processes more carefully, we can reduce costs. These do require investments to get off some of the older, high-maintenance computer systems onto more commercially-popular systems, probably will require some retraining of employees, but we feel over the next few years that we can make significant productivity improvements that will be helpful to all of us in this age of reduced resources.

[The prepared testimony of Mr. Hakes follows:]

Statement of Jay E. Hakes
Administrator, Energy Information Administration
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

Mr. Chairman, I am pleased to appear before this Committee today to present the Fiscal Year 1996 budget request of the Energy Information Administration, or EIA. This request is for $84.7 million and a total of 479 full-time equivalent staff years. This level of support will allow EIA to continue its core programs and achieve progress in areas such as electronic access, international and environmental coverage, and timeliness in order to meet growing customer expectations.

OVERVIEW

The Energy Information Administration is a leader in providing high-quality, policy-independent energy information to Government, industry, and the public, in a manner that promotes sound policymaking, efficient markets, and public understanding. While an integral part of the Department of Energy on an administrative basis, EIA is mandated to maintain a policy-neutral position. EIA was established by Congress as an unbiased source of energy information and analysis.

In accordance with Section 205 of the 1977 Department of Energy Organization Act, EIA collects, interprets, analyzes, and disseminates information on energy reserves, production, consumption, distribution, prices, technology, and related international, economic, and financial matters. EIA produces reports with statistical time series, projections of near- and mid-term future energy trends, and analyses of topical energy issues. On a reimbursable basis, EIA provides direct energy data, analyses, and data processing support to other Department of Energy offices and other Federal agencies.

The National Energy Information System contains the operational elements of the EIA. The Oil and Gas program develops, operates, and maintains the statistical information systems for the collection, processing, and analysis of data on petroleum and natural gas reserves, production, refining, distribution, marketing, and prices. The Coal, Nuclear, Electric, and Alternate Fuels program performs statistical and analytical functions for its respective fuels markets. The Energy Markets and End Use program maintains energy statistical and analytical information systems for energy end use, price, supply and demand balances, and economic, international, and financial matters. The Integrated Analysis and Forecasting program produces mid-term forecasts for domestic and international energy markets. The ADP Services program provides computer processing support to EIA, other Departmental offices, the Federal Energy Regulatory Commission, and other Federal agencies. The Information Services program performs final editorial and graphics preparation and public dissemination activities for all EIA information products. The Statistical Standards program provides coherent and credible strategies for information collection, analysis, and forecasting; develops processing and documentation standards; and coordinates standard definitions. Program Direction provides salaries, benefits, travel, and training for EIA personnel and funds administrative overhead.

USES OF EIA PRODUCTS

EIA data are a recognized and integral statistical source for customers in Federal, State, and local governments, private industry, the media, and the general public. The Bureau of Economic Analysis uses EIA's petroleum data for the Gross Domestic Product accounts. The Bureau of Labor Statistics uses our energy price and sales volume data to verify and re-weight the Producer Price Index, the Consumer Price Index, and to calculate foreign crude oil price indexes. EIA data on coal, electric power, and petroleum are used by the Environmental Protection Agency for developing the National Allowance Data Base and associated calculations. EIA analyses of waste water treatment costs associated with offshore oil and gas production also are used by the Environmental Protection Agency. The Department of Commerce uses jet fuel retail price and supply data in its projections regarding domestic and international tourism. EIA provides estimates of residential energy costs to the Administration for Children and Families, U.S. Department of Health and Human Services. The Federal Energy Regulatory Commission uses EIA data and analyses in conducting their statutory functions. The Commercial Buildings Energy Consumption Survey serves as a data collection vehicle for the Bureau of the Census, obtaining information on expenditures for building alterations and repairs. EIA also supplies data to the Commodity Futures Trading Commission, the Council of Economic Advisors, the Office of Management and Budget, the Treasury Department, the Congressional Budget Office, and the General Accounting Office.

The Nuclear Energy Agency of the Organization for Economic Cooperation and Development relies on EIA for historical data and projections of nuclear electricity generation, associated nuclear fuel cycle requirements, estimates of uranium resources, and electricity generating costs. The International Energy Agency uses EIA's information and analyses on energy sources as the official statistics to describe the U.S. energy situation in international forums and publications. State Government offices use EIA's price forecasts for State and regional assessments of proposed energy taxes and alternative energy strategies, and for ongoing analyses of supply, demand, and fuel substitution on a State-by-State basis.

EIA's data, analyses, and forecasts are used extensively by trade associations, including the American Petroleum Institute, the Independent Petroleum Association of America, the American Gas Association, the National Coal Association, the Edison Electric Institute, and the American Public Power Association. EIA is a major source of energy information for the media, including Forbes, Business Week, New York Times, Los Angeles Times, Wall Street Journal, Washington Post, Reuters News Services, a broad spectrum of trade journals and newsletters, plus national and local radio and television networks.

FUTURE GOALS

The information age is providing many technological advances that will drastically change the way EIA collects, processes, and disseminates energy information. These advances have raised our customers' expectations on speed and choice of access. Thus, to take advantage of these advances, EIA must make a significant investment within our available resources in FY 1995 and FY 1996. Currently, many EIA computer data systems are mainframe-based legacy systems. These systems must be converted to modern, low-maintenance database management systems that are compatible with the rapidly expanding choices of software available in the personal computer environment and facilitate efficient electronic dissemination. EIA is implementing a pilot Electronic Document Management System in FY 1995, with future plans to implement this uniform system across EIA. This system will reduce the time required to develop and process documents, store documents, provide search and retrieval capabilities, and provide the ability to electronically access documents through various technologies, such as fax-on-demand and Internet. These investments are essential to meet our customers' expectations, improve efficiency, and lower operating costs in future years.

EIA has moved ahead in a number of areas to provide our energy information electronically. Electronic access increases the availability of our information, improves the timeliness of the data, and has resulted in higher levels of customer satisfaction. EIA has introduced the EIA Home Page as a component of the Department of Energy's Home Page system. This Mosaic/World Wide Web application permits users access to EIA reports through Internet. Although now principally a text and graphics service, the EIA Home Page will soon point to a range of data files and executable applications that users may download. The Short-Term Energy Model is currently available for downloading.

The Energy Information Highway is being tested within EIA. Plans are to make these user-friendly applications available within DOE and to the public on Internet over the next year. Examples of these applications include World Energy, a country-by-country profile of oil, coal, electricity, and natural gas data; and Country Analysis Briefs, analyses of the up-to-date economic, political, and energy situations for more than 35 countries. The comprehensive Oil and Gas Information Source is a "reinventing government" initiative providing access to historical and current U.S. petroleum and natural gas information, including more than 150 data series on reserves, production, imports, exports, refining, distribution, consumption, transportation, inventories, and prices. EIA is also currently disseminating five reports through broadcast facsimile, four seasonal energy market "watches," and will also institute a fax-on-demand program in the near future.

FISCAL YEAR 1995 OBJECTIVES AND ACCOMPLISHMENTS

During Fiscal Year 1995, EIA will continue to provide a stable core of energy statistical publications and analytical reports to our customers. These include major multi-fuel publications, such as the Monthly Energy Review, the Annual Energy Review, the International Energy Annual, the Annual Energy Outlook, the International Energy Outlook, and the Short-Term Energy Outlook. Also included are the major fuel-specific publications, such as the Electric Power Monthly, the Natural Gas Monthly, the Quarterly Coal Report, the Petroleum Supply Monthly, and Petroleum Marketing Monthly, the International Petroleum Statistics Report, and the World Nuclear Outlook. In the alternate fuels area, EIA publishes two reports, Solar Collector Manufacturing Activity and Estimates of U.S. Biofuels Consumption. In the financial area, EIA publishes the annual Performance Profiles of Major Energy Producers based on information collected through our Financial Reporting System. In the consumption and environmental areas, publications include Household Energy Consumption and Expenditures, and Emissions of Greenhouse Gases in the United States.

In response to a June 1994 congressional request, EIA prepared a report containing "The Energy Information Administration's Assessment of Reformulated Gasoline." This report, submitted in September 1994, has been widely accepted as an authoritative source of information on the transistion to reformulated gasoline program implementation. In conjunction with this report, EIA implemented the "Reformulated Gasoline Watch," a proactive fax sent to Federal and State energy officials, industry, and the media. Also, EIA expanded its weekly telephone gasoline survey to include prices for reformulated gasoline in ozone nonattainment areas, as well as prices for all three grades of gasoline.

EIA recently published Natural Gas 1994: Issues and Trends, which provides information on the current state of the natural gas industry, such as new market services developed in response to the changing regulatory structure, financial developments occurring as a result of the deregulatory actions over the past decade, and changes in contracting and storage activities in the industry. Work has progressed in the area of greenhouse emissions, as well. In addition to publishing an annual report, Emissions of Greenhouse Gases in the United States, 1987-1992, EIA has been developing guidelines for reporting actions relating to reduction of greenhouse gases and setting up a database reporting system. A prototype data collection form was developed and circulated for evaluation. Several briefings were held in October and November 1994 in connection with this effort. EIA has briefed the Edison Electric Institute plenary session, the Center for Clean Air Policy, the Large Public Power Council, and the DOE/EPA Industry Partners Team Meeting on the greenhouse gases voluntary reporting program.

Other recent releases of EIA products include: Coal Data: A Reference, Coal Industry Annual 1993, Energy Use and Carbon Emissions: Non-OECD Countries, Manufacturing Consumption of Energy 1991, Alternatives to Traditional Transportation Fuels 1993, and Performance Issues for a Changing Electric Power Industry.

Through a centralized information distribution office, the National Energy Information Center, and individual analysts, EIA will respond to a wide range of energy inquires from customers, currently exceeding 160,000 inquiries each year. On-line accessions to EIA data on electronic bulletin boards have grown continually and are currently at a rate of 30,000 per year. Although EIA's Home Page is still under development, accessions are expected to exceed 150,000 by the end of calendar year 1995.

PERFORMANCE INDICATORS

EIA has been involved in performance measurement since its creation in 1977. Internally, EIA conducts audits of all of its data collection systems and models on a cyclical basis to ensure the existence and accuracy of documentation, the efficient operation of data systems and models, and the accuracy of results. Also, EIA has instituted a program to collect performance statistics on the operations of its systems that collect data. Under this program, automated data systems keep track of errors and anomalies that occur during their operation, enabling EIA to identify problem areas and take steps to correct them. An external element of the EIA performance measurement effort is the existence of the Professional Audit Review Team (PART), a team of officials established by law from other statistical agencies of the Government and chaired by the General Accounting Office. The PART reports annually to the President and the Congress on the management and conduct of EIA programs, with emphasis on the quality of data collection and analysis systems, the relevance and usefulness of energy information programs, and the independence of EIA from policy formulation and advocacy functions.

EIA recently joined in a pilot project sponsored by the Office of Management and Budget as part of the Government Performance and Results Act. Our project is titled "Vision 2000: Improving EIA Products and Services," and involves the development of performance goals and objectives and measurement of performance toward those goals. The two current performance goals are to assure EIA data and analyses are relevant to the needs of the customer and to improve the timeliness of and access to EIA energy information. Performance measures relate to customer satisfaction ratings and suggestions, number of customer contacts, electronic data availability, earlier release of energy information, citations in the media and press, and simplifications of products.

EIA is now in the process of reexamining our performance measures to take a more indepth look at our organization and its functions. The first step in developing a performance measurement system is to gain a better understanding of our core processes, which includes conducting an input/output analysis of EIA. The second step focuses on ways to improve the performance of the system based on the goals established in the Strategic Plan. The third step is to design a system of performance measures that would be useful in documenting progress toward our strategic goals, preparing EIA budget submissions, and supporting senior management's assessment of organizational strengths and weaknesses. This activity is nearing completion, and the current set of performance measures will be modified to include the results of this effort.

FISCAL YEAR 1996 BUDGET REQUEST

In support of fiscal restraint, EIA's Congressional budget request of $84.7 million for FY 1996 is approximately level with the FY 1995 appropriation of $84.6 million. This request represents a decrease of $2.4 million, or 2.7 percent, from the FY 1995 appropriation when inflation on contractual activity and adjustments to salaries and benefits are considered. EIA continues to identify savings from the elimination of lower-priority projects and process improvements. These savings amount to $2.4 million in FY 1996. The FY 1996 funding requested for EIA's basic consumption survey program is equal to the FY 1995 level, excluding inflation. Level funding of the consumption survey program is accomplished by funding EIA's multi-year surveys over the several years that the work on each survey progresses. This includes the commercial buildings, manufacturing, and residential consumption surveys and support to DOE's Clean Cities program to study fleet characteristics and use patterns in selected cities. The greenhouse gases program has been shifted from the Energy Markets and End Use program to the Integrated Analysis and Forecasting program, an internal transfer of about $1.6 million in FY 1995. This shift was made to tie the greenhouse gasses program closely to EIA's mid-term energy and environmental forecasting program. A total of $1 million is designated for this program in FY 1996, which serves as part of the Administration's Global Climate Change Action Plan.

DATA COLLECTION

Mr. REGULA. Do you outsource through contract some of your information sources?

Mr. HAKES. Well, a lot of our employees are contract employees and a lot of the data collection itself is done by contract employees. There are some areas where we purchase data from commercial establishments. For instance, when we do our energy modeling, we purchase the major economic parts of it from DRI/McGraw-Hill rather than duplicate that whole system. So there are a number of ways in which we utilize private sector resources.

Mr. REGULA. Why wouldn't the private sector do this if it weren't done by Government?

Mr. HAKES. I think the major reason is—and I think the private sector data collection people and the industry people would agree with this—is that much of this data is proprietary. If you take, for instance, a company's reserves or supplies, that is information that they don't mind giving up if everybody else is giving it up and the information is kept confidential. It's very important to the country to have that kind of information. It's actually very important to the industry. We have many industries come and say, We would like you to collect more data from our industry because we think the industry would operate more efficiently, and only the Government can actually get it in a way that the industry is comfortable with. They want someone that can keep it confidential, and they also want someone that can get access to everybody's data.

There is the additional point here, if we privatized, someone would have to copyright this data, which means that all Government agencies that use it would then have to pay the markup. It's usually quite high in copyrighted data. So that the savings would start to disappear since a principal number of our customers are in the governmental sector.

Mr. REGULA. Your data is totally available? It's public information?

Mr. HAKES. Except company-specific data. In other words, we try to protect the companies.

Mr. REGULA. Well, but you collect——

Mr. HAKES. The aggregate data is totally——

Mr. REGULA. Yes, that's what I mean.

Mr. HAKES [continuing]. Available to the public, yes, and it's a very transparent system. Many of the private companies, for proprietary reasons, don't release the interworkings of their models, for instance. Ours are open for inspection by the academic community and others who want to look at them. So the data and the documentation is all available.

ELECTRONIC ACCESS

Mr. REGULA. I assume you're online in terms of access by computer?

Mr. HAKES. Yes. Most of what we have now is available one way or another electronically, but what I think is more exciting is by the end of the year we hope that just about all of it will be available with a very friendly graphics interface. I've demonstrated this, prototypes of it, with college classes, as well as energy executives, Hill staffers, and I think most people have found that it is very user-friendly. So I think we have sort of a two-pronged objective. One is to have it available electronically, and, secondly, to have it available in a very user-friendly format, so that a person doesn't have to learn a lot of codes and special instructions to operate it.

OIL AND GAS PROGRAM

Mr. REGULA. I see the oil and gas program is three times the size of coal, nuclear, electric, and alternative fuels programs combined. Why would oil and gas be so much larger?

Mr. HAKES. Well, I think if you go back to the energy crises, the last four recessions that the country has had have been very closely associated with a flyup in world oil price. A flyup in world oil price will almost immediately lead to an increase in inflation, which history has shown over the last 25 years, if it's large enough, will almost always lead to a recession. So we do track oil and gas probably more carefully than we do other commodities. One of the reasons, of course, is that our petroleum supplies, almost half of them, come from foreign sources, and so there's greater sensitivity about that supply.

Mr. REGULA. Do you factor in political conditions in the supplying countries, or do you make estimates of how stable these sources are?

Mr. HAKES. We have available to us estimates that are made by other agencies of the Government, and we, of course, have to look at marketing strategies. For instance, this year in our annual forecast we have somewhat more oil supply coming from Arab OPEC in the year 2010. This is a result of several factors, but one of which is they're pursuing a market share strategy rather than force the price of a barrel up.

We cannot anticipate all the political possibilities, but in last year's international energy outlook we did look at what would happen if several very large producers came off the world market. We looked at a scenario that had a larger interruption of supply than we experienced during the Persian Gulf War, and I think that shows some of the parameters of what we're dealing with.

Mr. REGULA. So you have models available, and do you communicate these to the policy planners in Defense and State?

Mr. HAKES. Yes, there's quite good communication back and forth on these issues.

Mr. REGULA. I notice you show recoverable resources in petroleum, 23 and 38. I assume that is domestic years or is that total?

Mr. HAKES. That's years of domestic production. That card was published just a few months ago, and data, unlike wine, doesn't improve with age. Every five years, the Geological Survey does an update of its resource estimation. We work with them and the Minerals Management Service on reserves, and the five-year report just came out about three weeks ago and they have increased their estimate of onshore resources. I don't know what the Minerals Management Service will show this fall, but the actual number, if we calculated it today, would be a little bit higher than is on that card.

Mr. REGULA. All right. Do you duplicate work that USGS does in estimating oil and gas reserves?

Mr. HAKES. No, I think it's pretty evenly divided up. They have used some of our field studies, and we're quite aware of what they're doing and they're quite aware of what we're doing. So I don't believe there's any duplication there.

Mr. REGULA. And the Minerals Management Service does some of this, too?

Mr. HAKES. Right. They used to issue their five-year report at the same time as the Geological Survey, but this year the Survey's was issued about three weeks ago. I think the Minerals Management Service report is expected sometime this fall.

ENERGY MODELS

Mr. REGULA. Now you're strictly an information agency. Do you get into any policy issues or is it just furnishing data?

Mr. HAKES. Well, we service the policy office and the Congress for different scenarios that they would like to run on our models. So a lot of our work is utilized in other parts of the Department. Of course, in any model the results are somewhat dependent on the assumptions that you make. So sometimes they may produce a different result, but usually the analytic work overlaps to a large extent, and our models are widely used in the Department and we've done, on request, a number of projects for the Congress on various issues.

ENERGY CONSUMPTION

Mr. REGULA. Has the mix in terms of our energy consumption changed a whole lot over the last, say, 10 years as to coal, natural gas, and other fuel sources or is the mix pretty much the same?

Mr. HAKES. The mix is pretty similar. We do find in the 1990s that electric power, particularly produced by the independents, is coming more from natural gas, but we're showing a projected rebound in coal in the next century. The coal industry actually has had some of the biggest productivity improvements of any of the energy sectors.

We now break out the renewables more than we have in the past, and hydro tends to be a very stable source. Some of the nonhydro renewables, while very small, are showing very rapid growth. We see wind as the biggest growth area in the next 10 or 15 years.

Mr. REGULA. Wouldn't the use of wind require favorable climatic conditions?

Mr. HAKES. Well, yes. There's been a study done by the Battelle Labs that has identified, mapped the areas of the country that have high wind speeds, I believe it's over 13 miles an hour on the average, and most of those resources, actually, are in the upper Midwest. California, which has pioneered in wind usage, perhaps doesn't have as much potential resources as the upper Midwest.

I think utilities that are planning to use wind will use it as a fuel saver. They realize it can't be used for baseline because it's not available all the time, but if it costs less than natural gas, then they can use it as a fuel saver when the wind is blowing and use gas when the wind's not blowing.

Mr. REGULA. So they don't attempt to store it though batteries or anything of that nature?

Mr. HAKES. No. Some of the new storage domes that are being put around the country near electric power plants is helping the gas industry to be more flexible and to move in and out of electric, but there's no wind storage system that I'm aware of, at least in the short term.

COMPUTER FACILITIES

Mr. REGULA. I note you plan to spend about $8 million to operate the EIA computer facilities in fiscal year 1996. In the age of personal computers and local area networks, why do you need to continue an expensive computer facility?

Mr. HAKES. Well, that's a very good question. I would ask that myself. I think we are over some period——

Mr. REGULA. Well, you get to answer it. [Laughter.]

Mr. HAKES. In the next couple of years, we will certainly be decreasing our use of mainframe computers. It's like a bad habit; it takes some money to get off of mainframe computers because the codes have been developed for these computers, and to move them onto commercially-available software is fairly expensive, but it's the right thing to do. We are in the process of doing that. Our National Energy Modeling System, which is one of the heaviest uses of the mainframe computer, will be off of the mainframe by the end of the year. We're hoping in fiscal year 1996 to make the investments to perhaps eventually be totally off the mainframe computer. In the interim, there may be some cost savings by sharing mainframes, and then eventually I don't think we're too many years away from being off of the mainframe.

ONE PERCENT SET-ASIDE

Mr. REGULA. I notice you have a 1 percent set-aside in fiscal year 1994 and 1995. What's this for or how do you use that?

Mr. HAKES. I think it's required by either the Congress or OMB. Basically, there's a requirement that we set aside money to meet any contract charges that were not anticipated in the outyears. So we have always been instructed to do that.

ADMINISTRATIVE SUPPORT

Mr. REGULA. With all the administrative streamlining efforts and your planned FTE reduction for Fiscal Year 1996, why would not your bill from the Department for centralized administrative support services be declining?

Mr. HAKES. I don't know. It has declined somewhat over the last few years. By the use of more efficient lighting, the Department's bill to us has gone down somewhat. I don't know what's anticipated in the future on that. There may be some reduction in space. Our reduction in FTEs is not a very large one. I'd be glad to get you more information on that.

[The information follows:]

ADMINISTRATIVE SUPPORT SERVICES

Costs for the Department's centralized administrative support services are made up of two components, indirect and direct costs. Indirect costs are calculated by the Department's Office of Human Resources and Administration and are based on the percentage of on-site population each element makes up of the total number of DOE employees and contractors present. Direct costs are associated with each DOE element's unique needs. For indirect costs, EIA population for fiscal year 1995 represents 9.7% of the total Forrestal building population. Since the indirect costs do have a historical trend of increasing and EIA's one percent reduction in FTE's will reduce our share of the indirect costs by less than one-tenth of one percent, we expect an insignificant change in our bill from the Department.

Mr. REGULA. Mr. Skaggs?

DATA COLLECTION BY OTHER GOVERNMENT AGENCIES

Mr. SKAGGS. Thank you, Mr. Chairman. Sorry to be late in arriving.

And I'm trying to adjust my thinking to new realities, as we all are, in the environment we now find ourselves and so I've been using Louis Carroll as a source of questions for witnesses. [Laughter.]

Not facetiously, while I do not quarrel for a second with the need for good, current, and historic information about energy supplies and demand, and all of the many, many things that you do, the question does come to my mind that, at least to a layperson, there are similarities between the kinds of skills that you all need to have at EIA and much of what goes on within the Commerce Department in developing statistical abstracts and analysis of different industries, and so forth. I'm wondering what the potential for maintaining your value, but reducing what may be duplications of various kinds of both personnel and support services, would be if we were to look at a consolidation?

Mr. HAKES. Well, I've always found reorganization to be a somewhat messy way to deal with potential duplications or lack of coordination. I think there are other ways to do it that can be more productive.

I think there are two goals here. One is to save money and the other is to provide the right kind of service to your customers. The statistical agency heads meet on a regular basis. We meet once a month, and we have discussed, in connection with OMB, how we might cooperate better to reduce costs and to provide better service.

On the cost side, we do have data that could be shared among the agencies that is not currently shared because of confidentiality regulations and how they vary between the different statistical agencies. That could be dealt with statutorily, and I would be surprised if the administration didn't suggest some relief in that area in the immediate future. That would save some real money.

The other thing we've talked about in terms of service to customer is, why couldn't we create a virtual statistical agency on the Internet, have a home page where a citizen could go and access any information that was provided by the Federal Government? We found in our office that that's been a very good way of getting better coordination of the offices within EIA because it forces us to have a common interface with the outside. We've had a problem even within EIA using different systems that were duplicative within one agency, and I think it's the obligation of management to identify those, and unifying an organization doesn't necessarily bring you savings unless you manage that reorganization. We're still, I think, finding systems that haven't been harmonized from our sort of consolidation in 1977 of the energy agencies.

So I think that we can meet a lot of this goal of finding savings, operating more efficiently, providing better customer service with what I would call cost-cutting teams, which we can put into effect immediately without having to go through the messiness of reorganization and what for us would be getting pretty far away from our customers. I mean, a lot of our customers are in the Forrestal Building and are calling up almost on a minute-by-minute basis for information that they need to do their work, and I think if you brought all the agencies together, there would be less service there.

Mr. SKAGGS. But you're just a phone call away, no matter where you are physically; right? [Laughter.]

Mr. HAKES. Or even electronically——

Mr. SKAGGS. Right.

Mr. HAKES [continuing]. Digitally away. I don't know that it's so much that. I've——

Mr. SKAGGS. Well, walk me through sort of your best case for why being at home in the Department of Energy is advantageous versus being at home with sort of the center of gravity of the other statistical work that the Government does related to business.

Mr. HAKES. Yes. I also bring to this—I've worked for small agencies and large agencies, and I don't have the sense that larger is always better. Sometimes it's hard with the larger agencies to find the duplications because they're so much harder to manage. But I would say that in the electronic age that physical location becomes less and less important, as you suggest, because of the different ways we have of communicating. I had a meeting a month ago with the energy minister of the Philippines where we both had a TV screen in front of us and we were talking back and forth as if we were in the same room. So being across town I don't think would be a major problem.

But I do think that it's healthy for the Department to have EIA there as sort of an objective source of data within the Department. I think it's a good part of the system, and a lot of our work comes from the policy office, the Secretary's office. It's a little easier for us to relate to our authorizing and appropriations committees because we're the way that we are, and although I don't know that it would be the end of the world if there was consolidation, I just think the average person that does business with us is the same kind of person, if you're talking about someone from the natural gas industry or the coal industry, if they're in the building, they're going to stop by and see us and they're going to stop by and see the fossil energy people, or whoever they do business with, and I just think that overlap is not there if you lump everything together into one agency.

Mr. SKAGGS. Okay. Thank you.

PUBLICATIONS

Mr. REGULA. Thank you very much. We'll evaluate your testimony and; just a few more questions: how many different publications do you put out in a given year? And I don't mean in volume. How many different kinds? Do you do a lot of publishing?

Mr. HAKES. Yes. The raw figure I've used, and it varies from year to year, is about 70. One statistic the committee might be interested in is we have discontinued 10 publications since 1991. We occasionally do delete publications. In recent years we've been much more interested in international issues and we have published more in that area, but we've also been able to discontinue in some areas. So it's not like we just sort of blindly keep publishing the same thing year after year.

Mr. REGULA. Do you make your information available to other countries, internationally?

Mr. HAKES. Yes. There are frequent requests from other countries for our data. Basically, what we've done in the last year that I'm particularly excited about is we've established a program that works very well on the Internet to trade data with other countries, and I think it's very much in the interest of the United States and it's in the interest of people who are trying to do business abroad, to have good datasets on these other countries. We can get it at no cost because they want our data and it's kind of a barter system. The Internet, of course, is free. So we've been able to set this up now, and we feel like we're going to have much more timely data for the Government and for private investors on foreign energy, and we're able to do that at virtually no cost.

Mr. SKAGGS. Mr. Chairman, can I ask a question?

Mr. REGULA. Sure, go ahead.

Mr. SKAGGS. I just started reading my energy info card. [Laughter.]

HOUSEHOLD VEHICLE MILES

The household vehicle miles per gallon and the household vehicle miles traveled, one went up by roughly a third and the other went up by roughly a third. Does that mean we aren't using any more gasoline in 1991 than we did in 1979?

Mr. HAKES. Well, you have more households because of population growth. I'd have to go back and look at the exact number. I think we are using more now. During the early eighties, the use went down quite a bit, and since the price collapse in 1986, there's been a movement back up. So I think, obviously, the efficiency in the automobiles has retarded the growth. The increased miles driven, largely I think because of low prices, has increased the growth, and then you have population growth.

Mr. SKAGGS. Then I guess I don't understand these entries, but I don't want to take up more of the committee's time. I'll do some arithmetic while you finish, Mr. Chairman.

REDUCTIONS IN FY 1996 BUDGET

Mr. REGULA. I hope you've given some thought to how you will manage your Department with a downsized budget because it's very possible that we will not have available the amounts that you're requesting. Are you prepared to get the same job done with less money?

Mr. HAKES. Yes, we can get the same job done with less money. I would put two caveats on that. One is I would like in 1996 to be able to make some of these investments in getting off of the legacy systems and the mainframe, and, two, that there are new demands as well. But I think even those new demands can be met over the next few years.

One thing that is helpful, I think, to any agency is sort of a multi-year perspective on this because——

Mr. REGULA. I'm for a two-year budget——

Mr. HAKES. Yes.

Mr. REGULA [continuing]. And that's what you're talking about.

Mr. HAKES. Yes, that would be very helpful to us because if you get into the one-year budget, you never make the kind of investments that really make sense for us and for the taxpayers, and that's what we would like to be able to do.

I think over the next few years we can bring our costs down. I would anticipate in 1997 we would be able to submit a lower budget and be able to tell you that we were satisfying our customers with a very high level of product.

USER FEES

Mr. REGULA. Do you collect any user fees from your clients?

Mr. HAKES. Basically, the Government policy that applies to us and the statistical agencies is that we are only allowed to collect the costs of dissemination, except for customers like Government agencies where it's supplied free. So——and that's basically turned over to the Government Printing Office. They get our publication and they print them up. They charge the customer what it costs them plus some markup.

Right now, everybody on the Internet gets it for free because it's hard to calculate what the dissemination costs are. They are actually fairly minimal. Some of the universities now are starting to put in place systems where they can charge a person 13 cents, 18 cents, and it all adds up. I mean, we anticipate this year we may get in the range of 150,000 accesses on the Internet. So that's something that I think we have to look at. I think we have to work with the committee and the Congress in terms of what policies they would like to adopt, but right now the policy is—and one I think that's very beneficial to the public—to restrict the charges to the cost of dissemination.

Mr. REGULA. But you could charge, if it were required?

Mr. HAKES. If the statutes were changed——

Mr. REGULA. Yes.

Mr. HAKES [continuing]. You could do anything.

Mr. REGULA. Mr. Skaggs, do you have your arithmetic finished?

Mr. SKAGGS. Yes, yes, I do. [Laughter.]

Mr. HAKES. I'd better get out my card here.

HOUSEHOLD VEHICLES

Mr. SKAGGS. No, I just, if I'm reading this right, just for household vehicles, we went from 7.5 billion gallons to 8.25 billion gallons in the 12 years on your little card, which is an increase but a modest increase compared to a fairly big increase in the number of vehicle miles traveled. That was just——

Mr. HAKES. Yes, it's offset by the improved mileage of the fleet.

Mr. SKAGGS. Yes, that was all I was trying to get at.

Mr. REGULA. Well, I think the automobile industry has made great strides in getting the MPGs up, with lightweight, new materials, et cetera.

Mr. HAKES. And maintaining a high level of safety.

Mr. REGULA. Right.

Okay, thank you very much.

Mr. HAKES. Thank you.

[Additional committee questions and answers for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Overview of EIA Budget Request

Question: The fiscal year 1996 budget request for the Energy Information Administration is $84,689,000 and 479 FTEs, an increase of $123,000 in funding and a decrease of 4 FTEs compared with fiscal year 1995. If your staffing is decreasing by 4 FTEs, why is your budget increasing by $123,000?

Answer: The EIA budget request for 1996 is higher, despite a reduction of 4 FTEs , because of inflation on contract costs, the Federal pay raise, buy-out costs for voluntary Federal staff separations, and the need to invest in a reengineering effort that will reduce costs in fiscal year 1997 and beyond.

Question: Funding for salaries and benefits is increasing by 3.2% while staffing is decreasing. Please explain.

Answer: Salary and benefit costs are expected to rise by 4.9% in fiscal year 1996, and additional costs will be incurred for buy-out separations.

Potential Budget Reductions

Question: It is likely that the Committee will be faced with an allocation in fiscal year 1996 which is considerably below the fiscal year 1995 level. What would you do to reduce your budget to 10 percent below the current level? Please provide details, in priority order, for the record.

Answer: EIA has a legislative mandate to maintain a comprehensive energy data and information program, to maintain an energy analysis capability, and to produce energy forecasts. EIA has embarked on a major effort to reengineer and standardize our data collection and processing systems, and to convert these legacy systems to modern software languages that take advantage of the rapidly expanding commercial software capabilities available in a client-server environment. We are confident that these efforts will allow us to maintain the viability of our legislative mandates with lower budgets in fiscal year 1997 and beyond. A key element to these outyear savings is the investments required in fiscal year 1995 and fiscal year 1996.

A 10-percent reduction in fiscal year 1996 would require EIA to forego these planned investments and the resulting future year savings, and to take immediate deeper cuts in program activities. While EIA must maintain a presence in all of the legislatively-mandated areas, the highest priority will be on maintaining the integrity of the energy data programs for the major fuels since they provide the foundation for analysis and forecasting activities. Analysis and forecasting activities would be limited to those specifically mandated by legislation and the high visibility policy analysis requested by the Administration and Congress. Trend analysis in EIA publications would be reduced, and some analysis reports on industry trends and topical energy issues would be eliminated. All model development and enhancements, including interfaces to support outside users will be eliminated. Some reductions in the data programs will also be required, but the specifics need to be developed in consultation with stakeholders and customers in the Administration, Congress, States, industry, and the public. It is likely that the newer requirements of the Energy Policy Act of 1992, the costs of which EIA has absorbed even with a $2 million budget reduction in fiscal year 1994, would be targets for reduction or elimination.

Question: How would you spread a 20-percent reduction?

Answer: A 20-percent reduction would require some dramatic changes in EIA's current energy data programs in addition to the reductions described for the 10-percent cut. While the specifics need to be developed in consultation with stakeholders and customers, our past experience has demonstrated great resistance to the elimination of entire data series. Consequently, the reductions would require a complete reevaluation of the coverage, level of detail, regionality, and frequency of all data collections. Undoubtedly, this would result in a significant loss of data across all fuel areas and less timely publication of some of the remaining data.

Publications

Question: To what extent could some of your publications be eliminated or combined?

Answer: EIA has an on going program to review publications in consultation with our customers in search of opportunities for eliminations or consolidations. Today, EIA has a rather stable core of statistical and forecasting publication that are widely used by our customers, but even so, 10 publications have been eliminated in the past 4 years.

The Professional Audit Review Team, established by Congress, has been surveying customers of several EIA publications each year to obtain their feedback. EIA is also formalizing surveys of customers of our products, and one of the specific questions being asked is opportunities for eliminations.

With the growing opportunities for electronic dissemination, EIA is also evaluating the appropriate mix of paper and electronic products. Electronic products offer the prospect of reaching a much wider customer base without the cost of printing. One alternative under consideration is the production of summary level publications with detailed data and information being made available electronically. Our first survey of customers on electronic versus paper publication resulted in a large majority favoring the retention of paper publications, but we expect this to change over time.

Question: How often do you review your publication program to determine if each publication should be continued?

Answer: EIA's publications review process has been continuous since the agency was activated in fiscal year 1978. Each year, resource commitments to publications are analyzed as part of the annual budgeting and resource allocation process. Each analytical report must be defended agency-wide before any resources are expended to commence its preparation. All publications undergo a rigorous peer review before release.

These procedures have had impressive results over the years. The programs that EIA inherited from its predecessor agencies produced nearly 100 periodicals, comprising 600 issues, and more than 100 one-time reports each year. By fiscal year 1994, EIA had reduced the periodical count to 60, comprising 300 issues and 34 one-time reports. These numbers will continue to decrease.

Question: If you were to take a zero-based approach to publications review, which would be your top 20 publications?

Answer: It would be very difficult to identify the top 20 publications of EIA since different publications are of greater interest to different audiences. For example, fourteen EIA publications are specifically mandated by legislation, but none of the EIA statistical publications on the supply and pricing of major fuels (oil, gas, coal, electricity) would be included on this list. The following list of recurring EIA statistical, analytical, or forecasting publications, within the top 20 in either sales or distribution per issue (for example, annual sales divided by issues per year) provides one measure of EIA publications that are widely used. Even these figures may be misleading since sales and distribution may be affected by the number of participants in a particular fuel market or whether they are used primarily by government versus industry and the public. Many other EIA publications fall only slightly below these in sales and distribution. Noticeably absent from the list are statistical publications on coal, and state energy data and price and expenditure reports widely use by the state and congressional offices. EIA also produces some publications in multiple volumes, at minimal additional cost, to meet the varying needs of our customers. For example, the Annual Energy Outlook is produced in three volumes because many customers only want the summary outlook while others want the details provided in the companion Assumptions and Supplement volumes.

Natural Gas Annual
Assumptions for the Annual Energy Outlook
Emission of Greenhouse Gases in the United States, 1987-1992
Commercial Buildings Consumption and Expenditures
Performance Profits of Major Energy Producers
Monthly Energy Review
Annual Energy Outlook
Natural Gas Monthly
Natural Gas: Issues & Trends
Annual Energy Review
Short-Term Energy Outlook
Supplement to the Annual Energy Outlook
International Energy Outlook
International Energy Annual
Petroleum Supply Monthly
Electric Power Monthly

Commercial Building Characteristics
Manufacturing Energy Consumption Survey: Consumption of Energy
Petroleum Supply Annual
Inventory of Power Plants in the United States
U.S. Crude Oil, Natural Gas, and Natural Gas Liquid Reserves
Petroleum Marketing Monthly
Residential Energy Consumption Survey: Housing Characteristics
Weekly Petroleum Status Report

Question: If forced by budget limitations, for example a 25% funding reduction, to streamline your publications program, which publications would you eliminate and what savings would be realized from each of those eliminations?

Answer: Given a budget reduction of this magnitude, EIA's primary focus would be on reducing activities related to collecting and preparing the data and analyses contained in our publications, rather than the publications per se. The cost of producing a publication ($5,000 to $10,000 per issue) is extremely small in comparison to the cost, for example, of developing and maintaining an automated data collection system and collecting, processing, editing, and follow-up to assure the quality of the data (over $1 million per year for larger data systems). As discussed previously, reductions of this size would require the virtual elimination of all forecasting and analysis activities, and related publications, not specifically mandated by law, as well as dramatic changes in the coverage, level of detail, regionality, and frequency of EIA data collections. It is not at all clear that the suite of EIA data publications would change that much since some level of coverage would have to be maintained in all major fuel areas. However, the data available in these publications would be significantly reduced and/or the publications would be produced much less frequently (for example, quarterly versus monthly).

Question: To what extent are your data collections and publications specifically required by law?

Answer: This answer would be incomplete if it was not pointed out that, in addition to the minimum mandates listed below, EIA's organization legislation imbues the Administrator of EIA with an independence to implement data, analysis, forecasting, and dissemination programs to keep EIA customers properly informed of topical energy issues. For example, the Department of Energy Organization Act, in part, states "The Administrator shall be responsible for carrying out a central, comprehensive, and unified energy data and information program which will collect, evaluate, assemble, analyze, and disseminate data and information which is relevant to energy resource reserves, energy production, demand, technology, and related economic and statistical information, or which is relevant to the adequacy of energy resources to meet demands in the near and longer term future for the Nation's economic and social needs." These and other requirements found throughout statutes such as the Federal Energy Administration and Department of Energy Organization Acts, must also receive the attention given to specific legislative mandates.

The following activities and reports are specifically required by legislation:

- EIA Annual Report to Congress (Federal Energy Administration Act of 1974)
- Performance Profiles of Major Energy Producers (DOE Organization Act of 1977)
- Quarterly U.S. Coal Imports Status Report (Energy Policy and Conservation Amendments Act of 1985)
- Manufacturing Energy Consumption Survey, Residential Energy Consumption Survey, and Commercial Buildings Energy Consumption Survey (Omnibus Budget Reconciliation Act of 1986 and Energy Policy Act of 1992)
- Short-Term Energy Outlook, Quarterly Projections (Federal Energy Administration Act of 1974)
- Annual Energy Outlook (Federal Energy Administration Act of 1974)
- Annual Energy Review (Federal Energy Administration Act of 1974)
- Profiles of Foreign Direct Investment in U.S. Energy (DOE Organization Act of 1977)
- Survey of Electricity Production from Domestic Renewable Energy Resources (Energ Policy Act of 1992)
- Uranium Purchases Report (Energy Policy Act of 1992)
- Report on Studies of Transportation Rate Impacts of the Clean Air Act (Energy Policy Act of 1992)
- Emissions of Greenhouse Gases in the United States (Energy Policy Act of 1992)
- Alternatives to Traditional Transportation Fuels (Energy Policy Act of 1992)

Question: Absent a legal mandate, which of these efforts would you eliminate or streamline? Please provide details for the record along with savings estimates by project.

Answer: Absent a legal mandate, EIA would eliminate or streamline the following data collections and publications:

Eliminate	Cost Savings
Profiles of Foreign Direct Investment in U.S. Energy	$10,000/year
Uranium Purchases Report	$25,000/year
Streamline	
Manufacturing Energy Consumption Survey (contract costs for biennial versus triennial)	$333,000/year
Quarterly Coal Report (annual versus quarterly reporting of coal imports)	$1,000/year

Alternatives to Traditional Transportation (modify various requirements on Replacement Fuel Demand Estimates and Supply Information that are impractical or infeasible with available resources)	$55,000

Distribution of Funding

Question: Over half of EIA's funding is for personnel and overhead costs. How do you decide which activities to perform in house and which to leave to outside contractors?

Answer: Decisions on in-house versus contractor performance of work are influenced by in-house staffing limitations, the commercial availability of required skills, and a clear recognition of inherently governmental functions. EIA uses support service contractors to design and develop data systems, conduct ongoing survey operations, including the collection, entry, and processing of data, and prepare publications and electronic products. They also conduct research, programming, and documentation related to EIA's modeling and forecasting activities. Contractors, in part, man our National Energy Information Center that responds to public inquiries. These skills are widely available in the commercial sector. In-house employees plan the EIA program, make decisions on data to be collected and analysis to be performed, and review and approve all materials to verify the quality and objectivity prior to publication. Because we cannot afford to lose our corporate analytical and forecasting capabilities during contract transitions, in-house employees also perform analysis of survey results, assess industry trends, compose interpretive articles, lead model development, and interact with respondents and customers. Government employees also provide technical and resource management guidance, and administrative and financial management and support services.

Question: What is the major emphasis of your energy markets and end use program, and why is this program decreasing from $8 million in fiscal year 1995 to $5.8 million in fiscal year 1996?

Answer: The Energy Markets and End Use program maintains energy-related statistical and analytical information systems for energy end use, economic, international, and financial matters, and integrated price, supply, and demand balances. There is no decrease between the fiscal year 1995 enacted budget of $5.8 million and the fiscal year 1996 request of $5.8 million. The fiscal year 1996 request (with the fiscal year 1995 appropriation amended accordingly) does reflect a shift of the greenhouse gas inventory and voluntary reduction reporting programs to the Integrated Analysis and Forecasting program.

Question: What types of forecasting do you do in house and what do you do under contract?

Answer: Although contractor support is used by the Energy Information Administration (EIA) to develop, maintain, and execute its forecasting models, all of the forecasts published by EIA are prepared by in-house staff. In addition, all of the written analysis included in EIA's forecast publications is done entirely by in-house staff, with the exception of formatting the final version. None of EIA's forecasts is done solely by contract.

Question: Forecasting is at best an inexact science. How do you decide what to fund in this area? How much of your resources are dedicated to short-term forecasts versus mid- or long-term forecasts?

Answer: In its modeling and forecasting activities, EIA's funding covers maintenance of software, data updates, and expertise to produce baseline short- and mid-term forecasts on a regular basis with current modeling structures; complying with the applicable documentation and archival standards; research and development designed to improve the accuracy or extend the scope of the short-and mid-term forecasting systems; and application of those systems for policy analysis. The third item involves model enhancements, and requires that choices be made to determine the most cost-effective ways of improving the models.

The primary purpose of EIA's Short-Term Integrated Forecasting System (STIFS) is as a forecasting tool that enables users to assess trends in energy markets over the next 1 to 2 years. As such, it is important that the short-term interactions among the various energy markets be based on the best methodology and latest data. The model is also useful in assessing short-term impacts associated with energy supply disruptions.

EIA's mid-term models--known in aggregate as the National Energy Modeling System (NEMS)--are used for two primary purposes. The first is as a policy analysis tool, to help decision makers determine the impacts of various policy and/or legislative initiatives on energy supply, demand, and prices. The second purpose is as a forecasting tool. Since policy analysis is paramount, the primary determinant of what model enhancements should be funded is whether or not the proposed project will significantly improve EIA's ability to do analysis. For example, we are currently planning to improve our ability to analyze deregulated electricity markets, which are expected to behave differently when restructured than the regulated markets of the past. Because we have not previously assumed restructuring in our models, we are funding a project to incorporate a method for analyzing the financial and pricing implications of increased competition. A second project deals with technology improvement, and incorporating the latest information on technology in our energy supply and demand models, including dealing with complex questions of technological optimism and financial risk. Because technological change is accelerating and frequently results in efficiency improvements, it is important not only to have the most recent data available for analysis of the penetration of alternative technologies, but also to ensure a consistent and level "playing field" for these technologies. A third example involves incorporation of an important policy initiative, the Climate Change Action Plan, into NEMS for Annual Energy Outlook 1995.

The modeling budget encompasses a number of disparate activities, including model maintenance and updates, production of quarterly and annual forecast publications (the Short-Term Energy Outlook, the Annual Energy Outlook, and the International Energy Outlook), documentation and archival, analysis reports, feature articles, and customer requests.

The resources devoted to forecasting in fiscal year 1995 are as follows: The short-term forecasting budget is approximately 1 percent of EIA's total budget. This relates to routine production and maintenance operations, model development, documentation, and the preparation of the Short-Term Energy Outlook and its annual supplement. The mid-term forecasting budget is approximately 12 percent of EIA's budget. This includes the production process and publication requirements for the Annual Energy Outlook and its supplement, the International Energy Outlook, model development, and the production of documentation and other analysis reports and feature articles. It also includes responses to customer requests, which are a major component of the mid-term analysis program. Such requests include analysis of proposed energy taxes (such as the proposed Btu tax), analytical support for the Domestic Gas and Oil Initiative, analysis of scenarios dealing with the restructuring of the electricity industry, analysis of alternative penetration rates of renewable energy in response to different levels of technology costs and performance, and analysis of the market value of crude oil produced by the government's Naval Petroleum Reserve, among others.

In terms of the differing costs between the short- and mid-term modeling budgets, the mid-term models are more detailed regionally, and contain more policy and structural features, than do the short-term models. The short-term models are more econometrically oriented, and consequently have less need for the detailed data on technology, reserves, and other long-term factors that the mid-term models require. Also, since STIFS is a forecasting rather than a policy analysis tool, it does not include explicit policy levers for proposed legislation that is not yet in place (although relatively simple policy changes falling within the model's current structure can be analyzed). EIA is not currently funding any modeling, forecasting, or analytical activities in the long term (beyond 2015).

One of the principal values of the short- and mid-term forecasts is their impartiality. Claims in various energy fields often sound convincing but may be incapable of being true. The use of an independent statistical agency to provide a comprehensive set of projections that balance supply and demand provide considerable discipline to the policymaking process.

Question: Over the years, how reliable have EIA's forecasts been as compared, after the fact, with actual data?

Answer: The Agency's short-term forecasting track record is assessed annually in a technical supplement to its four quarterly forecast reports. Furthermore, some of the research done related to improving the quality of the short-term forecasts is allocated to deriving measures of the forecasts' uncertainty from various sources, including uncertainty related to basic input assumptions, model parameterization and model structure. In the last published forecast error assessment (Short-Term Energy Outlook: 1994 Annual Supplement, August 1994) EIA reported that average quarterly forecast errors ranged from 1 to 4 percent for major energy demand categories (U.S. petroleum demand: 1.4 percent; natural gas demand: 3.7 percent; domestic coal demand: 2.3 percent). Typically, oil prices are sources of some of the highest relative errors because of the inherent unpredictability of world oil markets. Detailed information on the short-term forecasting track record is available in the supplement.

In the mid-term forecasts, because they have a longer time horizon, there are fewer data points with which to compare them. In general, however, EIA's track record has been good, and has shown much improvement since the early 1980s. In particular, forecasts of energy consumption have proven to be reasonably accurate, with error rates of 7 percent or less since the early 1980s. While higher than the short-term error rates, these represent forecasts over a 10-to-15 year horizon, and are thus subject to significantly greater market variations. Although the earlier projections underestimated the role of more efficient end-use technologies and conservation efforts, thus overestimating consumption, better data and a better understanding of consumer behavior have helped EIA's consumption forecasts significantly. On the other hand, two difficult areas to forecast over the years have been the world oil price, which EIA tended to over-forecast, particularly until the mid-1980s; and natural gas prices at the wellhead, which have also been overestimated throughout the forecasts. World oil prices have tended to be lower than projected by both EIA and most other forecasters, because the ability of the Organization of Petroleum Exporting Countries (OPEC) to set prices eroded over the years, with lower demand and greater production by non-OPEC sources reducing the share of OPEC-controlled petroleum in world energy consumption. Natural gas prices have been overestimated in part due to the assumption of continued strict enforcement of energy regulations, in particular the Natural Gas Policy Act of 1978 (NGPA), which controlled several categories of natural gas production; and in part due to the rapid improvement in the production and development technology that has expanded the potential resource base for gas more than EIA assumed in the 1970s and early 1980s.

The assumption of continued strict enforcement of energy regulations, such as the NGPA, petroleum price regulations, and the Public Utilities Regulatory Policy Act of 1978 (which encouraged utilities to switch from natural gas to coal-fired generation) was a source of error in the early mid-term forecasts. As those regulations were interpreted less strictly, withdrawn, or overtaken by market forces, the models tended to project quantities more closely related to market forces, and their accuracy improved. It should also be noted that EIA assumes in its core forecasts that current laws and regulations will remain in effect. This is done in order to assure that there is no advocacy of policy changes in the forecast. Because laws and regulations do change over the forecast horizon, however, the effect of this assumption is that accuracy may occasionally be secondary to objectivity.

Annual Energy Outlook

Question: What are the key points in your Annual Energy Outlook?

Answer: The Annual Energy Outlook 1995 projected energy supply, demand, and prices to the year 2010. Key points from the reference case of this report follow.

In terms of supply, total domestic production is expected to rise from 70 quadrillion Btu in 1993 to 76 quadrillion Btu in 2010, an annual rate of increase of 0.5 percent. The largest growth rate is expected in renewables and "other" sources of energy, which are expected to grow 1.6 percent annually to 2010. Crude oil production is expected to continue its decline, and nuclear power should also decline slightly with the expected retirement of 10 gigawatts of nuclear capacity.

Imports of energy are expected to increase from 21 quadrillion Btu in 1993 to 33 quadrillion Btu by 2010, an annual rate of increase of 2.5 percent. The largest rate of growth is projected for finished petroleum products, which should grow at an annual rate of 4.6 percent. But increases in crude oil and natural gas imports are also expected, with an annual rise in net imports of 1.7 percent and 3.1 percent, respectively.

Domestic consumption of energy is expected to grow from 87 quadrillion Btu in 1993 (including all renewable energy) to 104 quadrillion Btu in 2010, an annual growth rate of 1.0 percent. The largest growth rate, as for production, is in the area of renewables and "other" consumption (which includes net electricity imports and net coal coke imports). Both petroleum products and natural gas also are expected to increase, at annual rates of 1.1 percent and 1.2 percent, respectively.

Natural gas prices at the wellhead are expected to increase the fastest of the major domestic fossil fuel prices, at an annual rate of 3.1 percent from 1993 to 2010. Crude oil prices, which are set in world markets, are expected to increase from $16 per barrel (1993 dollars) to $24 dollars per barrel by 2010, an annual growth rate of 2.4 percent. Coal prices are expected to increase only slightly, from $20 per ton in 1993 to $23 per ton by 2010, less than 1 percent per year.

The Outlook also provides alternative forecasts for scenarios in which the world oil price, economic growth, and technology penetration are higher or lower than the reference case.

Question: What do you project as the relative proportions of use among the various energy sources?

Answer: Between 1993 and 2010, the share of renewables in total energy use is expected to increase; the shares of natural gas and petroleum products are expected to remain about the same; and the shares of coal and nuclear power are expected to decline. The following table gives the relative shares of the various energy sources in consumption in 1993 and 2010.

Source	1993 (percent)	2010 (percent)
Petroleum Products	38	39
Natural Gas	24	24
Coal	22	21
Nuclear Power	7	6
Renewable Energy/Other	8	9

Question: How much does coal contribute to total energy demand? How is that expected to change over the forecast period.

Answer: See above table. Coal's share in total energy demand is expected to decline slightly, from 22 percent in 1993 to 21 percent in 2010. The primary cause is a loss of share by coal in electricity generation, as both natural gas and renewables gain share at the expense of coal over the forecast period.

End Use Consumption Surveys

Question: How many end use surveys do you conduct and how often are each of them fielded?

Answer: EIA conducts four end-use surveys: the Residential Energy Consumption Survey (RECS); the Residential Transportation Energy Consumption Survey (RTECS); the Commercial Buildings Energy Consumption Survey (CBECS); and the Manufacturing Energy Consumption Survey (MECS). All surveys have been fielded triennially since the mid-1980s. The MECS, originally on a triennial schedule, is now scheduled to be fielded biennially, as mandated by Section 171(a) of the Energy Policy Act of 1992. However, the EPACT was implemented long enough after the last previous cycle of the MECS in 1991 that it was impractical to field a 1993 survey. Thus, the next survey cycle stayed as 1994, and the current plan has a MECS scheduled every two years thereafter (in 1996, 1998, etc.).

Question: What is the time lag between the data year and the year the information is ultimately published?

Answer: Generally, the published reports are available two years after the data year, with data tables being available 4-6 months prior to report publications.

Question: What are you doing to shorten that time lag?

Answer: EIA has sped up the release of its end use data to its data users. For the 1991 Manufacturing Energy Consumption Survey (MECS), the 1992 CBECS, and the 1993 RECS, data tables from the statistical reports were released electronically and in preliminary published form prior to the final data publication. This meant that the data were available to users as much as six months prior to the final report. We also made these data available on the EIA Electronic Publications System and on personal computer diskettes. Preliminary data are also published, prior to report publication, in the Monthly Energy Review (MER) to benefit a wider audience. We are also trying to shorten the data collection and processing time. Beginning with the 1995 Commercial Buildings Energy Consumption Survey (CBECS), computer-assisted personal interviewing techniques will be used in order to eliminate data keying and speed up both data collection and editing.

Question: What is the rationale for conducting the Manufacturing Energy Consumption Survey (MECS) every two years?

Answer: Section 171(a) of the Energy Policy Act of 1992 mandated that a manufacturing energy survey be conducted "at least every two years."

Question: If the Committee were to recommend changing the MECS to a triennial data collection, how much money would be saved?

Answer: Moving from a biennial to a triennial MECS means conducting two rather than three surveys in any six-year period. Because each survey costs about $2,000,000 in contract funds to conduct, the annual savings in contract funds over the six-year period would be about $333,000 per year.

Question: When will you start work on the next MECS and what will it cost on a year-by-year basis for a triennial versus a biennial survey?

Answer: The next (1994) MECS is currently at the Office of Management and Budget awaiting clearance and is scheduled to be fielded in the next few months. Because it costs about $2,000,000 in contract funds to conduct each MECS, the annual cost for a triennial survey is $667,000 in contract funds and the annual cost of a biennial survey is $1,000,000 per year in contract funds.

Question: To what extent do you need statutory language (versus appropriations report language) to change the MECS cycle?

Answer: The biennial MECS report is required in the statute, Energy Policy Act of 1992, section 171.

Question: If bill language is required, please provide suggested language for the record.

Answer: The following are suggested statutory language and accompanying report language to amend the Energy Policy Act of 1992, section 171.

The following is suggested statutory language:

Section 171(a) (1) of the Energy Policy Act of 1992 (42 U.S.C. 13201 et seq.) is amended by striking "(1) in the matter preceding subparagraph (A) by striking 'on at least a triennial basis' and inserting in lieu thereof the following: 'at least once every two years;' and (2)".

The following is suggested report language:

This amendment would return the reporting of the Manufacturing Energy Consumption Survey to, at least, a triennial cycle as was required by Omnibus Budget Reconciliation Act of 1986. Returning the survey to a triennial schedule would not be a major detriment to understanding how energy is used and the changes that are occurring in energy consumption in the sector. The year-to-year changes in consumption are not that significant, and the EIA has the capability of developing fairly reasonable estimates of consumption for inter-survey years using statistical techniques. Respondents to the survey, who are manufacturers, will experience less reporting burden because this change would require them to provide data less frequently.

The following is suggested appropriations bill report language:

The Committee has provided funds for the Energy Information Administration to prepare and conduct the manufacturing energy consumption survey on a triennial basis, rather than on a biennial basis.

Question: For the record, please provide a breakout of the costs for each of your end use consumption surveys in fiscal years 1994, 1995, and 1996.

Answer: The table below provides the funding breakout for the requested years showing a biennial MECS (as required by law) and all other consumption surveys on a triennial schedule. The Alternative Fuels data program and the RECS frame redesign are also included.

Survey/Fiscal Year	1994	1995	1996
CBECS	$1,135	$3,695	$ 928
MECS	2,845	375	768
RECS	920	450	3,124
RTECS	469	150	150
Analysis/Publications*	365	365	365
Frame Redesign	1,075	0	0
Total	$6,809	$5,035	$5,335

*Analysis/Publications supports all of the consumption surveys.

Note: All figures above are in thousands of dollars and include both contract and FTE funds. The 1994 funds for MECS are higher than other years because of one-time revision costs to the survey due to requirements in the Energy Policy Act of 1992.

Question: Also for the record, note where each of these surveys is with respect to the data year currently underway or planned and the most recent data available from past surveys.

Answer: For the Residential Energy Consumption Survey (RECS), all data from the 1990 survey are available. All fieldwork has been completed for the 1993 RECS, and the reports on household characteristics and energy consumption and expenditures are due to be published before the end of calendar 1995.

For the Residential Transportation Energy Consumption Survey (RTECS), all data from the 1991 survey are available. Field work for the 1994 RTECS has just been completed. A data file is scheduled to be completed by August 1995, and all data are currently scheduled to be released by mid-1996.

For the Commercial Buildings Energy Consumption Survey (CBECS), all data from the 1989 survey are available. The 1992 CBECS has been fielded, the data have been processed, and the report on building characteristics has been published. The report on consumption and expenditures will be published in April 1995. Meanwhile, developmental work is in progress for the 1995 CBECS, which will be fielded this fall.

For the Manufacturing Energy Consumption Survey (MECS), data from the 1991 survey are available. The 1994 MECS questionnaire is currently at the Office of Management and Budget awaiting clearance, and field work is scheduled to begin in the next few months (MECS fieldwork must be conducted in the year following the data year, so that respondents can provide energy consumption and expenditures for the data year).

Reformulated Gasoline

Question: What is the definition of reformulated gasoline?

Answer: Basically, reformulated gasoline has a higher oxygen content and less aromatics (such as benzene) than conventional gasoline. Officially, the composition and properties of reformulated gasoline are to meet the requirements of the reformulated gasoline regulations promulgated by the U.S. Environmental Protection Agency under section 211(k) of the Clean Air Act Amendments of 1990.

Question: How widespread is the use of reformulated gasoline now?

Answer: In January 1995, reformulated gasoline accounted for about 30 percent of the gasoline consumed in the United States.

Question: What types of data are included in your "Reformulated Gasoline Watch," and how often are these data updated?

Answer: The "Reformulated Gasoline Watch" provides reformulated gasoline production and stocks by Petroleum Allocation Defense District for the previous five weeks. In addition, the "Reformulated Gasoline Watch" provides a narrative analyzing trends in reformulated gasoline demand, production, and stocks along with a description of important industry events. The "Reformulated Gasoline Watch" is updated each week.

Question: What is the cost of reformulated gasoline as compared with regular unleaded gasoline?

Answer: Using various estimates and measurements of the respective costs and prices of the two products, reformulated gasoline typically costs from 4 to 8 cents more than conventional gasoline of the same grade. This differential has fallen significantly in March 1995 due to declining prices for MTBE, a major additive used in most reformulated gasoline production.

While costs differ by refiner, the additional production costs involved in making reformulated gasoline (oxygenation, toxins removal, etc.) are estimated at 4 to 6 cents per gallon. Market price differentials, which may reflect additional storage, transportation, and administrative costs, as well as supply/demand factors, have varied from 4 to 7 cents per gallon on spot markets, and 6 to 8 cents at terminal loading racks. Retail price differentials are less clear, because reformulated gasoline and conventional gasoline are never sold side-by-side in the same market. However, within the same general regions, the price of reformulated gasoline has run from 2 to 11 cents per gallon above that of conventional gasoline.

Global Climate Change Action Plan

Question: How are you using the $1 million provided in fiscal year 1995 for the Administration's global climate change action plan?

Answer: The $1 million provided to EIA as part of the Climate Change Action Plan provides partial funding for two climate change-related programs that EIA is required to undertake by Section 1605 of the Energy Policy Act of 1992:

- Prepare an inventory of U.S. anthropogenic emissions of greenhouse gases for the period 1987-1990, with annual updates thereafter (section 1605(a));

- Create a set of reporting forms and a database for voluntary reports by individuals and firms of reductions in their emissions of greenhouse gases (section 1605(b)).

Total funding (including funds provided under the Climate Change Action Plan) for these two activities in fiscal year 1995 is $1.64 million. The Administration's Climate Change Action Plan contains a large number of voluntary reduction programs, such as "Climate Challenge," "Climate Wise," and "Green Lights." The statutory section 1605(b) program will become a registry for the accomplishments of firms participating in these programs. Using the 1605(b) program in this way, however, has greatly increased both the number of reporters and the complexity of the program. EIA section 1605 activities include:

The annual emissions report. The first emissions report was published in October 1993; the first annual update, Emissions of Greenhouse Gases in the United States, 1987-1992, was released in 1994. The second update will be released in October 1995.

The voluntary reporting system. Section 1605(b) also required the Department of Energy to prepare guidelines on how to report. These guidelines were issued in October 1994. The EIA made draft reporting forms available for public comment in November 1994, and submitted revised forms to the Office of Management and Budget for clearance under the Paperwork Reduction Act in March 1995. Clearance from the Office of Management and Budget is expected in June, and the EIA expects to be ready to receive reports within a month after clearance. The reporting forms were developed using fiscal year 1994 and 1995 funding, based on extensive pre-testing and discussions with potential reporters.

Currently, the EIA is designing a personal computer/LAN based "client-server" database to hold the information contained in the expected flow of reports. This database is being developed using state of the art "computer-aided software engineering" tools combined with widely available personal computer hardware and software to speed development, minimize "bugs," and to make the resulting system simple and inexpensive to maintain. This year's work includes design, development, testing, and documentation.

The EIA is also developing several mechanisms to both ease reporting and to reduce the long-run cost of forms handling. These include developing a computer version of the reporting form which will permit electronic reporting (through the telephone or the Internet); and cooperating with the Environmental Protection Agency, the Electric Power Research Institute, and any other interested parties to develop industry- or program-specific automated reporting systems.

Question: Why do you need to continue funding at the $1 million level in fiscal year 1996 for the climate change program?

Answer: The EIA fiscal year 1996 budget request for the greenhouse gases program remains unchanged from fiscal year 1995 at $1.64 million, of which $1 million is provided under the Climate Change Action Plan. The EIA's greenhouse gases program is an on-going program required by statute. Fiscal year 1996 will be first full year of operation for the 1605(b) voluntary reporting program. It is impossible to be certain how many firms and individuals will choose to report under this program, but the voluntary programs of the Department of Energy and the Environmental Protection Agency ensure that there will be large numbers of reporters. Many reporters will have an imperfect notion of how to calculate and report their emissions and reductions, and the EIA anticipates that the forms received will require extensive checking and validation to ensure a reasonable degree of accuracy for the reported information. Work in fiscal year 1996 will focus on the following areas:

- Preparing the 1996 version of the annual emissions report;

- Operating and maintaining the voluntary reporting system, including processing incoming forms, working with reporters to check and validate incoming data;

- Issuing the first annual report describing the information collected by the voluntary reporting system;

- Providing technical assistance to reporters on how to compute their emissions of greenhouse gases accurately;

- Developing an electronic "public-use" version of the voluntary reporting system database which will exclude confidential information but which will permit members of the public to search and retrieve information about emissions reductions. The EIA envisions disseminating the public use version of the database in a variety of media, including posting the necessary files on the Internet.

- Making any necessary improvements to the voluntary reporting forms (paper and/or electronic) and the database based on the experience of the initial year of the program.

Question: To what extent is this a new program for EIA versus a renaming under the "climate change" heading of work that was already ongoing?

Answer: The EIA's greenhouse gases program was established, contemporaneously with the President's Climate Change Action Plan, pursuant to section 1605 of the Energy Policy Act of 1992. The EIA program is entirely new, with civil service staff assigned full-time to the program and specifically earmarked funding. There is no function analogous to the greenhouse gases program that has been previously undertaken by the EIA.

Question: Will this function continue indefinitely in EIA or is it due to end at some point?

Answer: The EIA's greenhouse gases program is required to continue indefinitely by section 1605 of the Energy Policy Act of 1992. (The legislation specifies "annual updates.")

ADP Services

Question: What would be the impact of closing your mainframe computer operation and transferring to a microcomputer environment?

Answer: Transferring EIA's mainframe computer workload to a microcomputer environment requires re-engineering mainframe based legacy systems and investments in new technologies. EIA has started this transition and believes these investments will allow us to meet our customers' expectations, improve efficiency, and lower operating costs in future years.

EIA uses its mainframe computer to do the majority of its data collection and processing work, a lot of its analysis work, some of its forecasting work, and other functions. At this time, EIA's mainframe is still the workhorse of the computing environment. Many of EIA's computer systems are programmed in mainframe based languages. EIA is committed to converting these systems to modern languages that will operate in client-server environment in conjunction with a reengineering of the systems. This will require significant near-term investments, but is an essential ingredient to make a move from the mainframe possible and achieve significant cost savings in the future.

EIA has formed a strategic planning team to assess the appropriate roles of the personal computers, local area network (LAN) servers, and mainframe in EIA's future. The work of this team will not be finished for several months. However, to satisfy our computing needs, there is no doubt that EIA will need a number of LAN servers or an enterprise server in any microcomputer environment (personal computers and local area network). The team is addressing the operational and cost issues associated with various alternatives in conjunction with EIA's future computing needs. The computing strategy selected will be the one that meets EIA's needs at the least cost. As the power of personal computers, workstations, and the availability of software has increased, EIA has converted some of its business functions to the microcomputer environment and will continue doing this.

Question: How much would such a realignment of ADP equipment and services cost? Please provide details for the record.

Answer: EIA does not currently have a cost estimate for such a realignment, but an estimate is being developed as part of the current efforts to define the computing strategy that meets EIA's future needs at the least cost.

Set-Aside

Question: How were the funds in the 1-percent set-aside used in fiscal year 1994? How do you plan to use them in fiscal year 1995?

Answer: The DOE Chief Financial Officer has established an operating policy to set-aside these funds to insure sufficient obligational authority to meet costs incurred in prior years. These funds are maintained in a separate account, and equal 1% of EIA's current year's appropriation. EIA has received vouchers for work completed more than 5 years prior to the current fiscal year resulting from Defense Contractor Auditing Agency (DCAA) audits and their contract closeout review. In fiscal year 1994, $190,781 were paid out of this account to cover DCAA approved costs for closed contracts. In fiscal year 1995, EIA intends to maintain the 1% set-aside for use in resolving approved prior year costs. For fiscal year 1995, EIA has used $119,067 of the 1% set-aside to pay a contractor settlement fee.

Question: To what extent will you continue this set-aside in fiscal year 1996?

Answer: EIA will maintain 1% of our appropriation in a set-aside account to pay for approved contractor vouchers resulting from prior years completed work.

Administrative Support

Question: With all of the administrative streamlining efforts and your planned FTE reduction for fiscal year 1996, why isn't your bill from the Department for centralized administrative support services declining? ($8.8 million requested in '95 and in '96)

Answer: Costs for the Department's centralized administrative support services are made up of two components, indirect and direct costs. Indirect costs are calculated by the Department's Office of Human Resources and Administration and are based on the percentage of on-site population each element makes up of the total number of DOE employees and contractors present. Direct costs are associated with each DOE element's unique needs. For indirect costs, EIA population for fiscal year 1995 represents 9.7% of the total Forrestal building population. Since the indirect costs do have a historical trend of increasing and EIA's one percent reduction in FTE's will reduce our share of the indirect costs by less than one-tenth of one percent, we expect an insignificant change in our bill from the Department.

Question: What amount did you actually transfer to the Department for these services in fiscal year 1994?

Answer: For fiscal year 1994, EIA transferred $9,688,459 to DOE Office of Human Resources and Administration to cover our portion of centralized administrative services.

QUESTIONS SUBMITTED BY CONGRESSMAN SIDNEY YATES

Energy Information Administration

Question: What does the proposed reduction of $2.4 million mean to your ability to carry out your responsibilities?

Answer: The EIA fiscal year request represents a $2.4 million reduction from the fiscal year 1996 base (which includes inflation on contracts and pay raises). The proposed reduction represents savings from the elimination of low-priority projects and process improvements. We believe this reduction is achievable without adversely affecting our core responsibilities. Examples of these savings are as follows: Distribute data electronically to reduce publication costs and increase timeliness, ease, speed, and quality of data; reduce frequency of data collections; streamline documentation requirements, such as combining detailed methodologies into an annual document for each fuel area; increase usage and efficiency of computer technology, such as electronic mail and automated edit flag systems for data collection; work with other institutions to gather information on currently available processes and technology in order to facilitate the adaptation of existing technology.

Question: Why do you need to issue 330 reports and analyses? Couldn't these be consolidated?

Answer: EIA is continually seeking to consolidate or eliminate publications. We currently produce 60 periodicals (weekly, monthly, quarterly, annual, and triennial) comprising 300 issues. The remaining one-time reports are analytical or technical reports on issues of current interest. Since 1991, we have eliminated 10 publications and expect to make further reductions as we move to disseminate more information electronically.

Question: Who are the users of your information?

Answer: EIA data are a recognized and integral statistical source for customers in Federal, State, and local governments, private industry, the media, and the general public. EIA responded to over 160,000 questions and data requests, and disseminated over 466,000 copies of EIA publications in 1994. EIA has also increased its on-line data access, and these services are rapidly increasing from a level of 30,000 in 1994.

Energy policy makers in the Administration, the Department of Energy, and Congress have relied extensively on EIA data analyses and forecasts. Other Federal agencies are also major customers of EIA. For example:

- The Bureau of Economic Analysis uses EIA's petroleum data for the Gross Domestic Product accounts.
- The Bureau of Labor Statistics uses our energy price and sales volume data to verify and re-weight the Producer Price Index, the Consumer Price Index, and to calculate foreign crude oil price indexes.

- EIA data on coal, electric power, and petroleum are used by the Environmental Protection Agency for developing the National Allowance Data Base and associated calculations.

- EIA analyses of waste water treatment costs associated with offshore oil and gas production are used by the Environmental Protection Agency.

- The Department of Commerce uses jet fuel retail price and supply data in its projections regarding domestic and international tourism.

- EIA provides estimates of residential energy costs to the Administration for Children and Families, U.S. Department of Health and Human Services.

- The Federal Energy Regulatory Commission uses EIA data and analyses in conducting their statutory functions.

- The Commercial Buildings Energy Consumption Survey serves as a data collection vehicle for the Bureau of the Census, obtaining information on expenditures for building alterations and repairs.

- EIA also supplies data to the Commodity Futures Trading Commission, the Council of Economic Advisors, the Office of Management and Budget, the Treasury Department, the Congressional Budget Office, and the General Accounting Office.

Other governmental customers EIA serves include:

- The Nuclear Energy Agency of the Organization for Economic Cooperation and Development relies on EIA for historical data and projections of nuclear electricity generation, associated nuclear fuel cycle requirements, estimates of uranium resources, and electricity generating costs.

- The International Energy Agency uses EIA's information and analyses on energy sources as the official statistics to describe the U.S. energy situation in international forums and publications.

- State government offices use EIA's price forecasts for state and regional assessments of proposed energy taxes and alternative energy strategies, and for ongoing analyses of supply, demand, and fuel substitution on a State-by-State basis.

Business, industry, and the media are also major users of EIA data. With the move toward deregulation of energy industries, timely and accurate information has taken on an even more important role, since it is an essential ingredient for markets to perform efficiently. EIA data are cited widely by major news organizations, a broad spectrum of trade journals, newsletters, and national and local radio and television networks. The inclusion of EIA data in reference works, such as the World Almanac and the Statistical Abstract of the U.S., provides accessibility for use by larger segments of the public. Such accessibility is growing rapidly with user-friendly applications on Internet.

Question: What would these users do without your information?

Answer: There is no comparable source for the level and breadth of energy information that EIA provides. EIA was established by Congress in 1977 to provide a centralized source of credible energy information. At the time, the debate on energy frequently focussed on what the real facts about the situation were rather than the substance of the issue. For example, EIA data were critical in the discussion to deregulate the natural gas industry and in establishing emission allowance for utilities under the Clean Air Act Amendments. The collection of timely and accurate statistical data is a core government function that is essential to the development of sound policy, knowledgeable business decisions that keep our economy strong and public understanding. The government is in a unique position to perform this function not only because it possesses the mandatory authority which is necessary to collect much of the information, but also because it is viewed as an objective, unbiased source of information. A significant amount of data is proprietary. Company-specific information, such as petroleum reserves and supplies, is collected and aggregated for public dissemination. The private sector does not have the authority to collect data at this level and, therefore, cannot guarantee the confidentiality and equal access.

Question: How timely are your publications? By that I mean, how up to date is the information by the time you make it available?

Answer: The timeliness of EIA data varies by fuel type and publication frequency. We are continually trying to improve in this area. Some examples of our most recent efforts are:

- The annual Oil and Gas Reserves survey was accelerated by encouraging respondents to file their data in machine-readable form electronically, rather than on paper. The results of the survey were released 1 month earlier than the previous year.

- The timeliness of two weekly reports, Weekly Coal Production and Weekly Petroleum Status Report, was improved by 1 to 2 days through the use of telefascimile dissemination to some customers. The electronic version of the Weekly Petroleum Status Report was made available 1 day earlier, and propane data was released one-day earlier.

- By collecting data electronically, the Commercial Buildings Characteristics 1992 was released 2 months earlier than its predecessor publication for 1989. The data tables were released on EIA's electronic bulletin board 1 month before publication of the report.

- In response to the need for timely on-highway diesel fuel price data, EIA designed and implemented a telephone price survey that provides U.S. and Petroleum Allocation for Defense District-level prices. The prices are available on the day they are collected.

- EIA published the Energy INFOcard, a pocket-sized, laminated card that was designed to be a quick-reference source for EIA's most recent annual domestic data on petroleum, natural gas, coal, electricity, nuclear energy, renewable energy, total energy, and efficiency of use. This card allows EIA to disseminate data more widely and timely, because it is updated every 6 months, or more often than some of the publications from which the data are derived.

THURSDAY, MARCH 23, 1995.

EMERGENCY PREPAREDNESS PROGRAM

WITNESSES

SUSAN F. TIERNEY, ASSISTANT SECRETARY FOR POLICY
VINCENT J. McCLELLAND, DEPUTY DIRECTOR, OFFICE OF ENERGY MANAGEMENT, NONPROLIFERATION AND NATIONAL SECURITY

Mr. REGULA [presiding]. Next will be the Emergency Preparedness group. Assistant Secretary Tierney, am I right?

Ms. TIERNEY. Yes. Good afternoon.

Mr. REGULA. Okay. And Mr. McClelland?

Mr. MCCLELLAND. Yes.

Mr. REGULA. Well, your statement will be made a part of the record, and you can summarize for the subcommittee.

[The prepared statement of Ms. Tierney and Mr. McClelland and Mr. McClelland's biography follow:]

Statement of Susan F. Tierney
Assistant Secretary for Policy
and
Vincent J. McClelland
Deputy Director, Office of Emergency Management
Office of Nonproliferation and National Security
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

Mr. Chairman and Members of the Subcommittee, we are pleased to have the opportunity to present our FY 1996 consolidated budget request for the energy emergency preparedness program.

Our request is based on the continuing and clear need for Federal involvement in maintaining adequate and reliable national energy supplies, which is a vital component of our energy security. The U.S economy is fueled by a vast and complex network of supply systems, from production, processing and transportation to distribution of energy, within and outside the U.S. Moreover, risks to our energy supply systems are many: some are man-made; and others are due to such natural causes as hurricanes, earthquakes or harsh weather; and there are also risks stemming from the changing economic and regulatory environment. While some risks can be planned for, some cannot, and almost all disruptions in the energy supply systems entail interruptions and price effects with often adverse economic, health and safety costs too large for the private sector to bear.

The main goal of the Department of Energy's energy emergency preparedness program is to continue to reduce these risks through the development of effective energy emergency policies, as well as strategies and emergency management capabilities. We will promote the cooperation of key stakeholders, including other public agencies (Federal, state and local), the energy industry, and our international partners in the achievement of this goal.

The program has two principal elements: (1) planning, which includes policy formulation and guidance; and (2) operations, which includes activities to identify and assess emergency situations and ensure an integrated response.

As a result of an organizational review of the Department in 1993, management efficiencies dictated that these functional program element reporting relationships be adjusted. Thus, the Office of Nonproliferation and National Security, whose responsibilities include development and operation of the Department's Emergency Management System and the Emergency Operations Center, was assigned the emergency operations function. The Office of Policy, the Departmental focus for national energy policy development, was assigned the emergency planning function.

Our request for FY 1996 reflects a reduction of less than 1 percent from the FY 1995 request. Staff full-time equivalents and contract dollars have been reduced to account for program management economies and the general efficiencies of resource use achieved by the Departmental reorganization.

ENERGY EMERGENCY PLANNING

ACCOMPLISHMENTS

During FY 1995, and continuing in FY 1996, the Energy Emergency Planning program will develop improved vulnerability and risk assessment capabilities for both natural and man-made hazards, through a more systematic process for monitoring and reporting anomalies in energy systems, improved modeling of impacts of energy supply problems, and upgrading technical knowledge and analytical capabilities of staff. Vulnerability analysis activities will focus on emerging issues, including the energy supply reliability implications of the changing electric power industry structure, the growth in natural gas demand, and the shifting environmental regulatory regime, and the national security implications of the domestic refining base and the growing reliance on imported oil from the volatile Middle East. Activities in support of the International Energy Agency will continue, with emphasis on reinforcing U.S. policy positions concerning cooperative international responses to oil supply disruptions and improving Departmental response management procedures for international energy emergencies.

FY 1996 OVERVIEW

The FY 1996 request for Energy Emergency Planning is $3,587,000, a decrease of $23,000 from the FY 1995 appropriation.

	FY 1995 Appropriation ($000)	FY 1995 Request ($000)
Program Direction	$2,675	$2,675
Contractual Services	935	912
Total	$3,610	$3,587

FY 1996 funds for Program Direction are $2,675,000, the same amount as our FY 1995 appropriation. These funds support 25 full-time equivalent positions, a decrease of one from FY 1995 offset by the full effect of the FY 1995 and partial year effect of the FY 1996 locality pay increase and pay raise. The funding also includes administrative overhead, maintenance for computer workstations and computer use, training and travel.

FY 1996 funds for Energy Emergency Planning contracts are $912,000, a 2.5 percent decrease from FY 1995. The appropriation provides contract support for policy development activities, including assessment of the vulnerability of energy systems to man-made or natural disruptions, and such international planning activities as are required to foster cooperative response to international energy disruptions or surge energy requirements.

During FY 1996, the Energy Emergency Planning program will continue to develop and promote effective energy emergency policy and programmatic strategies which will minimize the risks associated with energy system vulnerabilities. To support this effort, the program will:

- Expand methods for discovering and analyzing energy system vulnerabilities and performing risk-based policy analysis;
- Identify and conduct focused analysis of emerging energy system vulnerability issues that may affect U.S. economic and national security or public health and safety;
- Identify regulatory, economic and institutional issues that could affect the reliability and adequacy of U.S. energy supply in general and during emergencies, in particular;
- Assess the status of energy emergency preparedness with relevant government and private sector stakeholders in order to promote improved planning and preparedness actions by each stakeholder;
- Develop comprehensive energy system descriptive data bases and analytical systems including the development of geographic information systems and energy flow and disruption impact models which facilitate policy analysis and planning as well as operational applications;
- Assess U.S. vulnerability to oil supply disruptions through reexamination of the macroeconomic consequences of oil price shocks;
- Examine growing U.S. petroleum product imports and national security implications of the recent trend in disinvestment in U.S. domestic refineries;
- Assess the ability of the U.S. petroleum industry to respond to temporary and long-term losses of imported crude oil and products under a broad spectrum of disruption scenarios;
- Continuously monitor hot-spots and emerging situations in the world and domestically where energy supply could be significantly affected;

- Expand the review of natural gas system reliability with emphasis on current and future demand profiles, the changing market structure, and their impacts on gas deliverability;
- Promote U.S. policy on cooperative international responses to oil supply disruptions through the International Energy Agency's Standing Group on Emergency Questions and through the testing of the IEA's Coordinated Emergency Response Measures process; and
- Support review and appropriate modification of international emergency response mechanisms through continued technical support and U.S. representation before the IEA's SEQ and the North Atlantic Treaty Organization's Petroleum Planning Committee.

ENERGY EMERGENCY MANAGEMENT

Accomplishments

During FY 1995, and continuing in FY 1996, the Energy Emergency Management program will continue to upgrade the Department's energy emergency management systems to better detect potential or actual emergency conditions and to develop appropriate responses to those conditions. In addition, we will work with Federal, state and industry officials to reduce not only the likelihood of energy emergencies but to mitigate the impacts should an emergency occur and to help restore normal operations as quickly and efficiently as possible. Finally, we will strengthen our readiness posture by refining our operational plans and procedures based on lessons learned from training exercises and actual emergency response experience.

FY 1996 OVERVIEW

The FY 1996 budget request for the Energy Emergency Management program is $4,632,000, an increase of $9,000 from our 1995 appropriation.

	FY 1995 Appropriation ($000)	FY 1996 Request ($000)
Program Direction	$3,788	$3,797
Contractual Services	835	835
Total	$4,623	$4,632

The FY 1996 request for Program Direction is $3,797,000. These funds support salaries and benefits for 41 full-time equivalents, administrative overhead, maintenance for computer workstations, mainframe computer use, training and travel. The increase of $9,000 from the FY 1995 Appropriation reflects the full effect of the FY 1995 and partial year effect of the FY 1996 locality pay increase and pay raise partially offset by a decrease in administrative overhead charges.

The FY 1996 budget request for contractual services is $835,000, the same amount as our FY 1995 appropriation. The request provides contract assistance to: conduct energy emergency tests and exercises to support program planning activities; conduct training for National Security training programs; continue development of a Continuity of Operations Plan to enable the Department to operate effectively through any emergency; update the emergency management system in accordance with revised Emergency Management System directives; develop and test plans, procedures and systems to monitor and assess energy supply situations; continue disaster mitigation and response planning and implementation activities; conduct seminars to test response plans; and provide technical assistance to states to update energy emergency preparedness plans.

During FY 1996, the Energy Emergency Preparedness and Response program will continue to use in-house resources for preparedness planning, operations and analysis for accomplishing energy emergency objectives. To support this goal, the program will:

- Directly respond to natural and man-made disasters as they occur. As required, energy technical staff will be sent to Federal Disaster Field Offices to provide damage assessments and assistance to state and local governments and industry in restoration of essential energy services;

- Monitor domestic energy situations to anticipate and/or ameliorate problems, prepare situation analyses and alert reports on energy problems and related energy events, and support senior Departmental officials with informed options and recommendations;

- Work with state emergency and energy officials and electric utilities to implement procedures which provide priority restoration of electric power at telecommunications facilities that are considered critical to national security;

- Enhance the all-hazards National Defense Executive Reserve Program to facilitate reservist participation in a wide range of energy emergency responses, and expand training programs to familiarize Reservists with relevant responsibilities and procedures under the Federal Response Plan;

- Coordinate the Department's participation in interagency response exercises sponsored by the Federal Emergency Management Agency;

- Continue hazard mitigation planning activities for electric utilities in collaboration with the Organization of American States;
- Assist, through the State Planning Project, states in developing all-hazards, all-fuels energy emergency plans;
- Sponsor energy industry security committees and host industry security conferences to bring together security managers of energy industries for discussion of threats to domestic energy facilities;
- Review and process Telecommunications Service Priority applications from energy industry companies to facilitate priority access to telecommunications installation and repair in the interest of national security;
- Develop and further integrate petroleum, electric power and natural gas databases into the graphic information system in the Department's Emergency Operations Center;
- Enhance national security emergency preparedness through close coordination with the interagency national security community and the identification of requirements for energy emergency preparedness adjustments in light of changing world order;
- Participate in interagency and internal DOE planning activities to strengthen and refine plans and procedures to respond to national security emergencies at Departmental Headquarters and in the field;
- Conduct energy assessment conferences with energy security stakeholders to review outlooks on availability of energy supplies, potential problems and proposed solutions; and
- Coordinate with the National Communications System and the President's National Security Telecommunication Advisory Committee to enhance the emergency preparedness of the nation's telecommunications system.

This concludes the statement of our FY 1996 budget request. We will be glad to answer any questions you may have.

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

VINCENT J. McCLELLAND

Vincent J. McClelland was appointed to the position of Deputy Director, Office of Emergency Management in January, 1994. Mr. McClelland, as Deputy Director assists the Director in the management, development, coordination, and implementation of DOE planning, preparedness, and response to operational, energy, and continuity of government emergencies involving DOE or requiring DOE assistance and assessments of hostile threats to Departmental facilities and all nuclear threat assessments. As such, he is responsible for advising the Director and senior Departmental personnel on the Department's Emergency Management System (EMS) policy, planning, and operational matters; directing internal reviews of the Department's EMS preparedness capabilities and requirements, and management support capabilities and facilities. Mr. McClelland also serves as the Chair of the Department's Emergency Management Advisory Committee (EMAC). Mr. McClelland is also responsible for managing and directing the activities of the Liquified Gaseous Fuels Spill Test Facility, located at the Nevada Test Site.

Other position held by Mr. McClelland at DOE include Director of Emergency Operations; Director, Office of Emergency Response and Preparedness, Chief of the Physical Security Branch, Office of Safeguard and Security and the Office of Safeguards and Security Program Manager for incident response.

Prior to joining DOE, Mr. McClelland worked in the Security Division at the Nuclear Regulatory Commission (NRC). Mr. McClelland's responsibilities included activities in the intelligence, classification, security, and safeguards policy areas.

Mr. McClelland began his nuclear career in 1975 at the Bettis Atomic Power Laboratory (Naval Reactors Facility). While at Bettis, Mr. McClelland's responsibilities included those of a Quality Control Engineer in the Light Water Breeder Reactor Program and design and installation support for a new safeguards and security alarm system and site emergency preparedness programs.

OPENING REMARKS

Ms. TIERNEY. Mr. Chairman and Mr. Skaggs, let me just start with a parenthetical comment. If you were to start charging the users of EIA a payment for the service, the Policy Office's budget would probably need to double because we are major user of their services.

Mr. REGULA. I was thinking about the private sector.

Ms. TIERNEY. Okay. My ears perked up when you said that. So that would certainly be a transfer payment that would hurt.

And let me mention one more thing about vehicles, and that is the number of vehicles per household has risen over the time period, as has the population of households. So we actually are seeing a steady increase in the amount of gasoline used in the automobiles. So you have two important pieces of information—you need to get the rest of their documents.

Mr. SKAGGS. It says, "household vehicle miles traveled."

Ms. TIERNEY. Yes.

Mr. SKAGGS. I assume that incorporates whatever increase in number of vehicles per household there is. So that's already assumed here, is it not?

Ms. TIERNEY. Maybe it is. When I looked at the data, it didn't look to me as though it is.

Anyway, I'm just trying to be a marketer for EIA's great services because they've got some good documents.

Let me talk about Emergency Preparedness, which is one of the responsibilities that the Office of Policy shares with our colleagues in Nonproliferation and National Security. In my written statement and oral statement, what I'd like to do is talk about the portion that the Policy Office is responsible for.

It might be useful to start with just a step back and recall the importance that energy and energy emergencies have played in our economy over the last 20 years. We tend to take energy for granted unless there's a problem. I remember a year ago, when there was a cold night and there were a lot of regions in the eastern part of the United States that were scared of not having enough electricity, natural gas or coal as a result of the cold snap that caused a very short-lived energy emergency. We don't have to think too far back to remember the long gas lines that create events when people take energy for granted.

Part of the job of Emergency Preparedness is to look at the trends in the structure of our energy markets in the private sector to determine whether or not vulnerabilities that are arising and then attend to some of those issues by either preparing our operations to handle those emergencies, should they occur——

Mr. REGULA. The operations of the private or public sector, or both?

Ms. TIERNEY. Both.

Mr. REGULA. Alerting them, because they have to do the preparing?

Ms. TIERNEY. Absolutely. As you know, most of the energy in the United States is provided through private markets. Most of the emergency preparedness is provided through private markets. We think that's appropriate. Most of the response is capably handled by private suppliers of energy. That's great.

The particular role that we share at the Department of Energy is being able to help bring special powers to bear when there are emergencies. We help provide links and technical assistance to back up what's going on in the private sector. From a preparedness and an analytical point of view, what we try to do is analyze whether or not the systems are ready to respond.

As an example, one of the things that we're beginning to analyze is the changing structure of the electric industry. As that structure changes, we're not interested in having the Federal Government provide electricity or step in to do the emergency preparedness function. Rather we want to look at the reliability of the system as it moves from one structure to another. We then share that information with our colleagues in the private sector and work with them as we do that.

Mr. REGULA. Do you see yourself as an early warning system on potential disruptions of energy?

Ms. TIERNEY. Very much so.

These issues of emergency preparedness matter at a time when we still believe that our national security is associated with our energy supply. The Department of Commerce just completed a study a month ago that concluded there are continuing national security issues associated with energy. Half of our oil now comes from imported sources and much of that from the Persian Gulf. So as long as we see a continuing trend, which we do expect to continue in the future of increased oil imports, especially from areas with political instability, we think there's a role for this preparedness function.

Energy emergencies may be prevented, some for very low costs, and some for very high costs. What we try to do is analyze and then help the private and public sector, where appropriate, put in place those methods to avoid emergencies to make sure that there is additional capacity in the private system, and then to see where there are gaps and vulnerabilities. We are doing the vulnerability analysis and then working to assure that systems are in place.

We've done several important things in the past year, and let me just highlight three of the items that the Office of Policy has conducted. One of them is, at the direction of Congress through the Energy Policy Act, we did a study of the potential vulnerability of islands or the insular areas of the United States, should there be an oil crisis or shortage of oil supply, and then look at the preparedness for the shortage like the Strategic Petroleum Reserve and other private sector response systems to be able to supply the islands. We found that, in fact, the vulnerabilities are not as high as one would think in the conventional wisdom, and that oil supply systems are in place to handle those special circumstances.

Another thing that we did, which took a long time to negotiate was to move our colleagues in other countries through the International Energy Agency to put in place more private sector economic techniques should there be a disruption of supplies on world oil markets. We want to be able to use markets first, and always first, to respond to oil crises, and that took some elbow grease to convince our colleagues that this policy was right for all of us. We were able to accomplish that just last month after a year of negotiations.

We also hold workshops from time to time. One of them that we held was in the Gulf region to look at how one would be prepared to respond to an oil spill and what systems are in place, and go through a vulnerability analysis following that.

As we look ahead to Fiscal Year 1996, we see a couple of areas to highlight for your attention. One of them would be the oil refining sector in the United States. We have not added refining capacity in the United States in the last 20 years. We are beginning to increase our imports of refined product, as we're continuing to increase our demand for refined product. And so we want to look at the capability of the U.S. to continue to supply refined products and its implications for the economy. I already mentioned that we're looking at market structure, especially in electricity and natural gas, to see if they will remain ready to supply customers, should there be crises or shortages or disruptions on the system.

Finally, let me discuss management issues in the Policy Office. Over the past three years, we have been aggressively trying to manage within our means. The budget for Emergency Preparedness in the Policy Office has gone down 30 percent since 1993. We are asking for the same amount of money in 1996, essentially. The request is 2 percent less than in 1995.

And what that has meant for us is that we've been very careful. We have reduced our actual full-time equivalent employees by 10 in that past year. We have dropped off lower-priority work. We've done an important job in trying to really be clear about what we think are the most important things to be doing. We have improved our management-to-employee ratio, so that we are trying to manage in a flatter organization.

I tell you that because we are at the point now where we think that we are giving you a credible budget by asking for the same amount as last year because we have really been trying to husband and manage a much more lean operation.

With that, I thank you for your attention. I'm pleased to answer some questions.

OIL SHORTAGE

Mr. REGULA. This is "Inside Energy."

Ms. TIERNEY. Our favorite.

Mr. REGULA. "'The world is on the brink of another oil shock,' former Secretary Donald Hodel warns in a paper released. He claims civil war is likely to break out in Saudi Arabia once its current leader, King Fahd, dies. 'Such conflict,' he said, 'would certainly disrupt Saudi oil production, if not halt it completely.'"

Is this one of the emergencies you're prepared for?

Ms. TIERNEY. Without commenting on the particulars of the event that he predicts, clearly, the type of circumstance that he's alluding to is one of the things that, yes, indeed, we do look at. We are engaged in understanding the implications of increasing reliance on oil from the Persian Gulf States. One of the things that we are working on, as I talked about, looking at our increasing oil use, and events such as that, without ascribing to his particular scenario.

Mr. REGULA. Your title is "Emergency," one and "Preparedness," two.

Ms. TIERNEY. Yes.

Mr. REGULA. All right, what's the preparedness dimension, assuming there is an oil shock? How are you preparing for it?

Ms. TIERNEY. Let me talk about two things. One of them is a number of policies that are to reduce U.S. vulnerability to oil use.

Mr. REGULA. All right, what are those?

Ms. TIERNEY. Energy efficiency. As you know, the budget before you focuses on increasing the marketing and attractiveness of energy efficiency, so that people can adopt technologies——

Mr. REGULA. But you don't do that specifically; you would just say there ought to be something done in that field; right?

Ms. TIERNEY. But knowing that we are the Policy Office that works with the rest of the Department of Energy—and, indeed, we do work on developing policies and we will be presenting to Congress about six weeks from now a National Energy Policy Plan on behalf of the Department——

Mr. REGULA. Okay.

Ms. TIERNEY [continuing]. That precisely states things like that, that we do reduce our use of energy to an economically efficient level for the economy. So there are things on that side.

The other thing that we do is to have in place systems that are brought online and used in the event of an emergency. We have in place the Strategic Petroleum Reserve that we are willing and ready to sell oil from should we see a disruption of supplies.

Mr. REGULA. Do you have any control over SPRO?

Ms. TIERNEY. The Policy Office, by virtue of where it sits institutionally in the organization, yes, indeed, has. There would be a team called into place were there to be an emergency. I would be personally a member of that team, as would my colleagues from the Emergency Operations Office and Fossil Energy——

Mr. REGULA. You would alert everybody that there's a problem?

Ms. TIERNEY. Among other things. We would have the decision before us of whether to sell oil from——

Mr. REGULA. Right.

Ms. TIERNEY [continuing]. From the SPRO, yes.

Mr. REGULA. Mr. Skaggs?

Mr. SKAGGS. Thank you.

SELLING EIA DATA TO ITS CUSTOMERS

I, obviously, missed your line of questioning with the witness from the Energy Information Administration, wherein I gather you raised the prospect of selling their products, which elicited your——

Ms. TIERNEY. Yes.

Mr. SKAGGS [continuing]. "Don't make me buy."? But that raises a kind of generic question within Government generally, which is the fact that intelligence is broadly defined as a free good, and, therefore, we have a hard time knowing how to value it and, therefore, how to know whether EIA's budget is where it is, where it ought to be or not. So why not make you buy it—I mean, enhance your budget appropriately, but give Mr. Hakes' customers funds to buy information and see whether or not they choose to buy his information or not?

Ms. TIERNEY. Well, let me try to——

Mr. REGULA. You say put a marketplace discipline in what they produce?

Mr. SKAGGS. Right.

Ms. TIERNEY. Let me try to——

Mr. SKAGGS. And let me pose a second question that's related which has to do with your reliance on intelligence community product, which I assume you do rely on to some degree. I'm interested in how well they meet your customer requests and tasking and how we should go about valuing what you get from imagery and other intelligence sources.

Ms. TIERNEY. If you allow me, I really want to talk about those separately——

Mr. SKAGGS. Yes.

Ms. TIERNEY [continuing]. Because my brain can only handle one at a time.

Mr. SKAGGS. Mine, too.

Ms. TIERNEY. Okay. Let me try to repeat what Dr. Hakes said with regard to some of the implications of a charge or having this information that is now collected by the Federal Government on energy markets move into the private sector.

One of the things that he said, which I——

Mr. SKAGGS. That's not my question, though. My question——

Ms. TIERNEY. Charging me?

Mr. SKAGGS [continuing]. Is constructing, and acknowledging that it would be a construct, but constructing a market transaction of some kind even agency to agency or bureau to bureau, so as to——

Ms. TIERNEY. Yes.

Mr. SKAGGS [continuing]. Determine value in a better way than we can when it's a free good——

Ms. TIERNEY. Yes.

Mr. SKAGGS [continuing]. Passing with no transaction cost.

Ms. TIERNEY. Well, because I believe in principle strongly with the idea of pricing services accurately and having people use services by virtue of their value, then pricing actually helps on this, but let me give you some examples. They're going to be anecdotal because I don't quite know how to answer it except for anecdotally.

We actually buy analytic services from quite a few vendors, whether it's Cambridge Energy Research Associates on some energy forecasting information, or other organizations. We also get information from EIA and we ask them to run our information on their computers.

We certainly turn more often to EIA to do it because there is not a charge. The charge is the queue, essentially, the fast turnaround time, and their ability to service us, too much work I think for what they're able to deliver.

The difference is we go parsimoniously, very parsimoniously, to the private sector when they charge $4,000 for a day of analysis work, as opposed to having information that is readily in the public domain in the form of a document that we can turn to repeatedly, and there are real cost hurdles that inhibit our ability to work. I don't think I'm answering your question directly except to say that, as a matter of strategy and tactic, we have to—

Mr. SKAGGS. Let me invent a hypothetical——

Ms. TIERNEY. Okay.

Mr. SKAGGS [continuing]. Also anecdotal. Let's say that Dr. Hakes' customer list, at least covering 95 percent of what he thinks are the users, were parsed out in whatever fractions within the Government, and, therefore, his budget was parsed out accordingly. And let's say you constituted 20 percent of the demand for his services and you got 20 percent of his budget, but you would be able to buy energy information services anywhere you pleased. If that is, indeed, the best source of that information at the margins, that's where you'd go and it would be demonstrated by that, admittedly, connived transaction——

Ms. TIERNEY. Yes.

Mr. SKAGGS [continuing]. That that was the case, but it may be that he can't compete with Cambridge on a new product, and we would find that out.

Ms. TIERNEY. Maybe. I think I'd go to them because there is such a depth and breadth of the data that they are able to collect today, by virtue of their access to information that they are able to collect confidentially. I mean, I hear the hypothetical, and the answer is it's an intriguing hypothetical, kind of like school choice. You know, you have your dollars and you decide where to take them.

Mr. SKAGGS. Yes.

Ms. TIERNEY. And I suspect that we would go to them.

Mr. SKAGGS. Which is fine. I mean, again——

Ms. TIERNEY. Exactly.

Mr. SKAGGS [continuing]. The market is not a moral judgment; it's just efficiencies.

Ms. TIERNEY. Exactly.

Mr. SKAGGS. And if that's the most efficient place, terrific. Then we'll know that rather than merely assuming it.

Ms. TIERNEY. Okay. With Dr. Hakes sitting right behind me, I wouldn't dream of telling you whether I thought this was a good idea or not because I don't know what he has in his hands. [Laughter.]

Mr. SKAGGS. Well, why don't you go——

INTELLIGENCE COMMUNITY BRIEFINGS

Ms. TIERNEY. Now the second question——

Mr. SKAGGS. Right.

Ms. TIERNEY. Let me make sure I'm going to answer the right question. I heard you ask whether or not, as a customer of intelligence services, whether or not my needs are being met?

Mr. SKAGGS. Yes.

Ms. TIERNEY. You should——

Mr. SKAGGS. And, in particular, whether you've had occasion to actually try to task the intelligence community for a particular product and how well that's gone.

Ms. TIERNEY. Yes. I am a——

Mr. SKAGGS. I'm an alumnus of the Intelligence Committee, and I'm trying to continue that.

Ms. TIERNEY. I'm a major and frequent user of the services. I not only get multiple briefings per week; I task them for specific projects relating not just to issues associated with world oil markets, but also related to matters affecting the competitive performance of U.S. companies in foreign countries, marketplaces. I get briefings on national security issues, as more traditionally defined movement of fissile materials around the world and what's going on politically in many sensitive countries. I am, in general, an extraordinarily pleased user of services. I believe that on projects where I ask for a specific box that I'd like them to come back and provide me with some intelligence on, I get timely and useful information. And, in general, I have a lot of information coming across my desk that I can pick and choose from.

Mr. SKAGGS. Okay, thank you.

ENERGY EMERGENCY REPORTS

Mr. REGULA. Do you publish your conclusions? How do you alert the marketplace about concerns that you have and ideas on preparedness? Is there a monthly publication that's available or how do you disseminate the facts that you assemble?

Ms. TIERNEY. In a variety of ways. One example is through a report. We are about to submit to the public, and we will be happy to provide a copy to the committee, a report on the experience in last year's energy emergency.

Mr. REGULA. So it's an annual——

Ms. TIERNEY. No. That's a specific report on a specific issue, and we do that—like the insular study that I mentioned a few minutes ago. Those are not periodicals in the sense that they'll be annual reports, but on a specific event or issue where we publish a report or an analysis.

Other things that we do are hold workshops with people, especially with our colleagues in emergency management, where we would get the community of stakeholders together and share ideas or issues with them.

I'm not aware of any annual report that we publish. Am I wrong on that? No.

Mr. MCCLELLAND. There's also lessons learned from exercises——

Ms. TIERNEY. Yes, good point.

Mr. MCCLELLAND [continuing]. And various incidents that we respond to, and actions associated with them from approved systems.

Mr. REGULA. Does State and/or Defense communicate with you, and do they either provide you with information or do you provide them with information, because, obviously, foreign, defense and economic policy has to be driven to some extent by the availability of energy?

Ms. TIERNEY. We absolutely work with them as team members, if you will. A good example of that is the negotiations that took place over the last year under the auspices of the International Energy Agency, where we wanted to move our colleagues in other countries toward a policy that would allow use of markets first, rather than going to more Draconian emergency response means. We did that as a team with the State Department, as sort of cochairs of a negotiating team, if you will. But I use that as one example because we are in frequent contact with them.

Mr. REGULA. Well, obviously, to make your efforts worthwhile, it has to be disseminated to policymakers. Do you send us an alert up here at the Hill?

Ms. TIERNEY. In the event of an emergency, yes, we would do that.

Mr. REGULA. Well, sometimes emergencies don't happen if you can anticipate them. Do you do some anticipatory work?

Ms. TIERNEY. Yes. An example of that would be, as I said, the insular study, where we would be looking at and anticipating whether or not there would be special oil emergency problems for Hawaii or Puerto Rico, for example, and we would alert you to our findings, and, in fact, have done that.

If we had other ones, we would so alert you. One that we will be alerting you and the rest of the world to is our continuing rise in dependence on imported oil. That will be part of our National Energy Policy Plan which we will be presenting to you.

Mr. REGULA. How do you alert us?

Ms. TIERNEY. In the form of a document——

Mr. REGULA. Okay.

Ms. TIERNEY [continuing]. Which we will be presenting in about six weeks.

Mr. REGULA. It seems to me, looking at the numbers, we ought to be pretty concerned because we're very vulnerable on imports.

Ms. TIERNEY. I agree with you.

Mr. REGULA. Do you have any questions before we go to the next group?

Mr. NETHERCUTT. No.

Mr. REGULA. These are the people that are going to alert you that you'll have to sit in a gasoline line.

Mr. NETHERCUTT. Don't tell me too soon. Let's hope not for a while. [Laughter.]

Ms. TIERNEY. We don't think it's happening tomorrow——don't worry.

Mr. REGULA. Okay.

Ms. TIERNEY. Thank you, Mr. Chairman.

[COMMITTEE NOTE.—Additional committee questions and answers for the record follows:]

ADDITIONAL COMMITTEE QUESTIONS

Overview of Budget Request

Question: The fiscal year 1996 budget request for the Office of Emergency Preparedness is $8,219,000 and 66 FTEs, a decrease of $14,000 and 1 FTE below the fiscal year 1995 level. There are actually 2 offices funded by this appropriation, one in the Department's Policy Office and the other in the Nonproliferation Office. Please explain the distribution of the workload between the Policy Office and the Nonproliferation Office.

Answer: DOE's emergency preparedness program has two distinct and different functions: (1) energy emergency policy formulation; and (2) emergency response activities. Currently, the first function resides in the Office of Emergency Planning (Policy Office) and the second in the Office of Emergency Management (Office of Nonproliferation and National Security).

The goal of the Department's Office of Emergency Planning is to foster the Nation's energy security through: the development of energy emergency preparedness policy to prevent and mitigate the impacts of energy supply disruptions; coordination of energy emergency preparedness policy with all relevant stakeholders, including Departmental program offices, other Federal agencies, state and local government, the private sector, and our allies (principally within the International Energy Agency and NATO); and assurance of sound Departmental emergency management practices during international energy emergencies.

The goal of the Office of Emergency Management is to serve as the Department's focal point and interagency point-of-contact for emergency preparedness and response activities; to develop and operate reliable capabilities to monitor and assess the security of this Nation's energy systems and supplies; and to be prepared to mitigate energy disruptions through an integrated and coordinated Departmental response. To accomplish this task, the office coordinates efforts to conduct operational response measures to reduce the impacts of supply disruptions on public safety, the economy and on national security.

Question: It seems this organization serves in a coordinating role for energy emergency preparedness. Why does there need to be separate offices for this function?

Answer: The Department's emergency program plays a much broader role that coordination. The prevention of emergencies or the mitigation of impacts should emergencies occur are vital components of U.S. energy security. The DOE emergency program offices serve as the focal point for assessing energy system vulnerabilities and developing policy and response strategies in close cooperation with our allies, other government agencies, and the energy industry.

On May 12, 1994, Under Secretary Curtis established a Task Force to review consolidation of Headquarters Emergency Management functions and activities to promote efficiency and reduce costs. The Task Force concluded in a report issued October 31, 1994, that the existing Emergency Management System provides the basis for an efficient operating system within and outside the Department, and that no significant cost saving could be realized by consolidating Headquarters Emergency Management functions and activities. However, the Task Force identified several enhancements to reduce cost and improve efficiencies.

Some of the actions associated with these activities to reduce cost and improve efficiency may be supplemented by results of the Secretary's strategic alignment initiative, which commenced activities on January 3, 1995. One of the charges of the Strategic Alignment Team is to identify ways to reduce costs and promote efficiencies by elimination of redundancies and duplications in the Department. A report is to be delivered by May 5, 1995, with implementation of Departmental accepted recommendations by September 30, 1995.

Question: Are there any other energy emergency offices in the Department? Please explain.

Answer: The Office of Emergency Planning provides overall policy guidance for preparing and responding to energy emergencies. There are no other energy emergency offices. However, the Office of Emergency Management, which has responsibility for the emergency response activities under the purview of this Committee, provides overall direction for the Department's Emergency Management System through the promulgation of requirements, implementing guidance, and technical standards. The Office of Emergency Management also ensures the readiness of the emergency response capabilities of Departmental elements through appraisals of emergency management programs, evaluations of emergency response exercises, and reviews of Emergency Readiness Assurance Plans developed by contractor and Departmental elements.

The emergency management organizations within individual program offices provide program-specific implementation of the requirements, guidance, and technical standards associated with the Emergency Management System. In addition, Defense Programs provides programmatic direction for the Department's seven radiological emergency response assets, which include: the Nuclear Emergency Search Team; Accident Response Group; Aerial Measuring System; Atmospheric Release Advisory Capability; Federal Radiological Monitoring and Assessment Center; Radiation Emergency Assistance Center/Training Center; and, Radiological Assistance Program. Environmental Management provides programmatic direction for the transportation emergency preparedness program.

Question: If the Committee were to recommend consolidating this function into other existing programs, where would it most logically fit?

Answer: At this time, we would not make any recommendations to the Committee regarding the consolidation of emergency preparedness functions since this is the subject of an ongoing review within the Department. Some functions involve domestic energy supply, some involve international oil supply and security, and some involve the Department's own weapons and other facilities. The Strategic Alignment team is evaluating various options for locating these functions. As with the Department as a whole, however, moving or disaggregating the functions will not reduce the need for funding unless some are discontinued.

Question: What administrative and FTE savings could be achieved from such a consolidation?

Answer: Potential program direction and administrative cost savings through consolidation of emergency preparedness functions and activities is part of the Secretary's ongoing strategic realignment initiative. Specifically, one of the charges of the Strategic Realignment Team is to identify ways to reduce costs and promote efficiencies by elimination of redundancies and duplications within the Department. Recommendations on strategic realignment are scheduled to be presented to the Secretary by early May.

Strategic Petroleum Reserves

Question: How do you interact with the Strategic Petroleum Reserve Office?

Answer: The Office of Policy and the Strategic Petroleum Reserve (SPR) Office work closely on a wide variety of subjects, including SPR size and drawdown policy and procedures, to ensure an effective U.S. response to an oil disruption. The Deputy Assistant Secretaries and Office Directors who manage these activities meet regularly to coordinate their work.

During disruptions, the relationship between the Office of Policy and SPR can best be described by the roles they would each play on the Department's Emergency Management Team (EMT). The Under Secretary, in coordination with the Assistant Secretary for Policy and the Director, Office of Emergency Management, would form an EMT during an oil supply disruption and develop policy recommendations to be delivered to the Secretary. The Assistant Secretary for Fossil Energy, representing the SPR, would serve as a member of the EMT, thereby participating in the response development process, and would have operational responsibility for executing the SPR's portion of the overall U.S. disruption response.

The Office of Policy develops policy and provides guidance for the process that selects the tools the Department will use to combat a disruption, including international coordination. The SPR is one, albeit the primary, of those tools, and its use must be incorporated into a comprehensive disruption response.

Question: In the event of an oil supply disruption, what would you do as compared to what SPR Office would do?

Answer: During an oil disruption, the Office of Policy would provide leadership as part of the Department's Emergency Management Team (EMT), guiding the process that selects the appropriate tools the Department will use to combat a disruption. The SPR's focus would be largely on operational issues related to the SPR. While a key element of U.S. disruption response policy, the SPR's use must be integrated into a comprehensive disruption response.

Other factors also need to be considered. As a member of the International Energy Agency (IEA), the U.S. is under obligation to cooperate with other member nations in responding to oil disruptions. Any response the U.S. might desire to take as a nation could be made much more effective if taken in concert with our allies. The Office of Policy is responsible for leading our efforts at the IEA.

In addition, our oil supply disruption response may entail consideration of an extensive public relations campaign, conservation efforts, fuel substitution, surge production, bilateral efforts with producing countries, and a host of other such measures. The Office of Policy is responsible for molding all our efforts into a coherent response policy to address the particulars of the disruption.

Question: Are you involved with the Naval Petroleum Reserve? If so, how does NPR fit into the emergency preparedness picture?

Answer: The Emergency Planning Office is not involved to any large extent with the Naval Petroleum Reserve (NPR), as it is not considered a disruption response tool.

Question: Why couldn't your whole function be turned over to the SPR Office?

Answer: The development and deployment of a comprehensive energy security policy to address oil disruptions involves a range of issues in addition to the SPR. While the SPR is limited to maintaining the operational readiness of the SPR, emergency preparedness necessarily must extend across a much broader spectrum of response measures. Hence, the coordination of the Department's emergency measures is seen as best residing in a separate emergency policy/operational entity.

For example, a key element of a U.S. disruption response would be coordination with its allies in the International Energy Agency (IEA). The Department's Office of Policy, in conjunction with the State Department, represents U.S. interests at the IEA. The effectiveness of any individual response we might like to take to a disruption can be made much more effective by acting in concert with our allies.

In addition, a disruption response will entail consideration of an extensive public relations campaign, conservation efforts, fuel substitution, surge production, bilateral efforts with producing countries, and a host of other such measures. The Office of Policy is responsible for molding all our efforts into a coherent policy to address the particulars of the disruption. The SPR's responsibility resides solely with maintenance and operation of the SPR.

In addition, if by "whole function" the question refers to the entire range of responsibilities of the Emergency Planning and Emergency Management offices, activities involving the security of the electricity sector, gas and oil pipelines, refineries, and Department of Energy facilities are unrelated to the work of the Strategic Petroleum Reserve.

Travel Budget

Question: How do you justify a travel budget of $744,000 for 61 FTEs?

Answer: The FY 1996 request for travel as combined shown on pages 585 and 591 of our budget justification is $315,000. Salaries, benefits, and other support as well as travel is requested for 66 FTEs. Travel funds are essential for participation in emergency planning and operational technical meetings with Federal/State/local government and industry representatives, and to provide technical assistance at remote sites during emergency situations. International travel is included for participation in meetings of the International Energy Agency's (IEA) Standing Group on Energy Questions, annual meetings of the IEA Governing Board, and representation at the NATO emergency planning committees. Recently, foreign travel was necessary to complete the Insular Area Energy Vulnerability Study required by the Energy Policy Act (Section 1406), as well as to participate in other international emergency planning meetings.

National Defense Executive Reserve

Question: Who are members of the National Defense Executive Reserve?

Answer: There are four National Defense Executive Reserve groups authorized by Section 710(e) of the Defense Production Act of 1950 and sponsored by the Department of Energy: Oil, Gas, Electric Power and Solid Fuels. There are about 150 National Defense Executive Reservists. The Reservists are volunteers from energy firms across the nation. We have encouraged the participation of those persons with production, operations, supply, distribution and security expertise.

Question: What exactly do you do with these people each year?

Answer: National Defense Executive Reservists are standby reservists who could be utilized by the Department in times of serious emergency. During catastrophic disasters such as hurricanes or earthquakes, DOE staff respond at disaster sites or as part of the Emergency Management Team at Departmental Headquarters. We intend to use National Defense Executive Reservists to supplement Departmental expertise in disaster responses. In addition to members of the National Defense Executive Reserves, we work with recently retired industry experts, technical experts at the Department's Power Marketing Administrations and other Department of Energy staff. We are holding training sessions to familiarize National Defense Executive Reservists and industry experts with Department of Energy disaster response responsibilities.

Question: What amount of funding is devoted to the various activities associated with the National Defense Executive Reserve? Please provide details for the record.

Answer: The conduct of training programs (contractual service) for the National Defense Executive Reservists costs $30,000 per year. These training programs are designed to focus on the purpose and use of the Federal Response Plan and DOE's responsibilities under Emergency Support Function 12 (ESF-12). Emphasis is placed on implementation of the Federal Response Plan, the role of ESF-12 Emergency Response Teams at FEMA Disaster Field Offices and the participation of NDER industry experts as members of the Emergency Response Team.

Program directions costs for this program including salaries, benefits and travel are approximately $25,000.

Emergency Operations Center

Question: What is the purpose of the Emergency Operations Center?

Answer: The purpose of the Operations Center is to operate and maintain DOE Headquarters emergency operations facilities (e.g., Emergency Operations Center and the Technical Support Center in Germantown) to collect and process information relative to emergency notification and reporting; and support Emergency Management Team activities at the Headquarters level. These facilities serve as the focal points for the receipt and processing of all emergency notifications, as well as other events impacting or affecting DOE operations and/or programs within the context of the Department's Emergency Management System.

Question: Do you fund the Emergency Operations Center in your budget? If so, how much is budgeted for this effort? If not, what organization within the Department is responsible for funding the center?

Answer: Funding for the Emergency Operations Center is not funded out of the Interior and Related Agencies appropriation. Organizationally, it is located within the Office of Emergency Management and funded out of the Energy and Water Development Appropriation.

Seasonal Energy Assessment Conferences

Question: How often do you conduct "seasonal energy assessment conferences"?

Answer: Seasonal energy assessment conferences are nominally conducted each spring and fall. We have sponsored a Winter Fuels Conference each year since 1989 to examine heating fuel availability. We rely on current market indicators, weather patterns, and supply availability and demand to determine if an assessment conference is needed before the peak cooling season and the peak heating season.

Question: Give some examples of what you address at these conferences.

Answer: Examples of specific topics discussed at recent seasonal assessment conferences include:

- Post Persian Gulf-crisis Oil Market Issues and Critical U.S. Energy-related Interests
- Infrastructure Issues and the Federal Response Plan
- Solid Fuels Reliability: Midwest Flood, Coal Strike
- Enhanced Transportation Waiver Process
- Energy Supply Reliability
- Gasoline: Clean Air Act Issues
- State Perspectives on Fuel Availability
- Long & Short-Term Weather Outlook
- Short-Term Oil Outlook & Impact on East Coast Market
- Distillate, Propane, Electricity, Coal Issues
- Futures Market

Question: Who participates in these conferences?

Answer: These conferences are attended by Federal, State, and industry energy officials.

Question: For the record, please provide a list of conferences which were held in fiscal year 1994 and the cost of each one, and a list of conferences planned for fiscal year 1995 and 1996.

Answer: Seasonal Assessment Conferences provide a forum to gain a national and regional perspective on the energy supply outlook, and to enhance participants' understanding of potential energy supply problems. We rely on current market indicators, weather patterns, supply availability and demand to determine if an assessment conference is needed before the peak cooling season (spring) and the peak heating season.

One assessment conference was held in FY 1994 at a cost $8,424. One winter conference is planned for FY 1995, and one conference is also planned for FY 1996, each at an estimated cost of $10,000. We will conduct additional conferences if circumstances warrant.

Emergency Management System

Question: Your budget proposes a large funding increase for contractual services to improve your energy emergency management system and to improve your disaster mitigation and response capability ($115,000 in '95 and $660,000 requested for '96). Please explain this proposed increase.

Answer: The budget request of $660,000 for contractual services includes $115,000 for emergency planning activities including preparing for and conducting tests, exercises, training and simulations involving senior DOE management, other Federal, international State and local government agencies, and industry. The balance of $545,000 is for contractual support activities associated with implementing operational systems and procedures to monitor, assess, report and respond to a potential or actual emergency. These activities include enhancements to DOE's emergency management system, data systems and models, and improvements to disaster mitigation and response implementation plans and procedures.

Question: To what extent are other parts of the Department or other Federal agencies helping to pay for these efforts?

Answer: Funding from external sources is not used to pay for these efforts.

Question: What specifically will you do with the additional funds? Please provide details for the record.

Answer: Funds of $545,00 are requested for contractual support activities associated with implementing operational systems and procedures to monitor, assess, report and respond to a potential or actual emergency. These activities include enhancements to DOEs emergency management system, data systems and models; and improvements to disaster mitigation and response implementation plans and procedures.

Administrative Support

Question: To what extent are you required to pay the Department for centralized administrative support services? What do you pay for?

Answer: Certain Departmental components funded under the Interior and Related Agencies appropriations bill in effect reimburse the Department's administrative offices for overhead costs not budgeted in the Energy, Water and Development Appropriation. These include the Economic Regulatory Administration, Energy Information Administration and Emergency Preparedness. This overhead is annually calculated on the basis of the number of FTEs supported. It includes rent, telephone, supplies, furniture, postage, messenger, building operations, office moves, equipment, maintenance, telecommunications, training, Library services, and printing under $500.

Question: How much did you pay for these services in Fiscal Year 1994 and how does that compare with fiscal years 1995 and 1996?

Answer: For FY 1994, $791,000 was obligated for administrative overhead; FY 1995 estimate is $700,000 and for FY 1996, we are estimating to obligate $685,000.

QUESTIONS SUBMITTED BY CONGRESSMAN SIDNEY YATES

Emergency Preparedness

Question: Why should we not abolish your office?

Answer: The main goal of DOE emergency preparedness program is to foster our energy security through ensuring adequate supplies of energy, maintaining reliable energy supply systems, and responding effectively to energy emergencies. We are vulnerable to oil supply disruptions and economic losses because we depend heavily on imported oil from politically unstable regions of the world. Our energy supply systems, including electric power and natural gas and oil, are also vulnerable as they are regularly subject to natural disasters and changing economic and regulatory climates.

Some energy emergencies may be prevented, but only at high costs; others may not be preventable at all. While a considerable portion of our emergency preparedness and response mechanisms are supplied by the private sector, because of severity and costly consequences often associated with energy emergencies, it is impossible for the private sector to bear the entire costs and carry out needed responses.

For this reason DOE emergency preparedness program has a critical role to play: to anticipate potential emergencies and be prepared with cost-effective policies and programs to prevent them whenever possible; mitigate their impacts should emergencies occur; and responding effectively in coordination with other government agencies, industry and allies to promote rapid actions to restore energy supply systems.

Moreover, with technical staff at on-site locations during emergencies, credible status information can be communicated to senior DOE decision-makers to promote informed decisions and the implementation of orderly response programs.

If the office were to be abolished, most of these functions would have to be carried out elsewhere in the Department.

Question: What are the on-going functions of Emergency Preparedness?

Answer: The Office of Emergency Planning advocates the need for and value of emergency preparedness in industry fora (e.g., oil, gas, electric) around the country. We are calling attention to the fact that levels of emergency risk accepted by energy companies and others providing essential services to a region can greatly influence the consequences that accrue from an emergency.

Second, we are conducting workshops around the country to explore the extent of emergency preparedness by energy companies and state and local governments and to identify and correct impediments, if any, which could interfere with planning or response effectiveness.

Often, companies may plan for themselves but overlook or be unable to organize their emergency plans to include interdependent effects [e.g., effect of loss of telephone service on electric service restoration; consequence of loss of electric service on petroleum pipeline operations].

Third, we are representing U.S. interests in international fora which deal with energy emergency planning; notably, the International Energy Agency (IEA). Our primary focus in that environment is to assure that both the policies and operational capabilities of the U.S. and its allies are proper to deal effectively with emergencies which may arise. For example, we recently achieved a change in IEA emergency response policy, moving from a reliance on international allocation of oil in a crisis, to primary reliance on stockdraw and other market-oriented measures.

And lastly, we are continuing to perform our own assessments of risks which may result from energy vulnerabilities to natural hazards and other types of emergencies, both domestic and international in origin. Some energy systems, by their nature, are more important than others in terms of their potential to affect the national welfare; other systems either possess or could exert strategic influence in times of emergency. We are constantly (re)examining these and other factors in the ever-changing world of evolving energy dependencies and systems to assure that our energy security interests comport with our national security interests.

The Office of Emergency Management leads the Department's efforts to improve how we prepare for and respond to emergencies. We accomplish this through several activities.

First, we develop and refine reliable and flexible systems to anticipate emergencies, assess their severity and respond appropriately. The importance of timely and accurate information flow for informed emergency decision-making was aptly demonstrated during the crisis events occurring over the last 13 months (e.g., power outages in northern Mississippi, Colonial Pipeline Company's ruptured pipelines, and, at the request of the National Security Council, the electric power situation in Haiti).

Second, to strengthen our readiness posture, we develop and test our operational plans and procedures to respond to emergencies. Without testing and refining plans and procedures, we will lack the ability and confidence to correctly respond when emergencies occur and perhaps make poor crisis management decisions.

Third, we detect potential disruptions, help mitigate their adverse impacts when they do occur, and help restore normal operations as quickly and efficiently as possible. Through the lessons learned from actual and simulated emergencies we can develop and refine our programs to deal with emergencies before they occur. We perform this activity in close collaboration with other Federal agencies, with States and localities, and with the energy industry.

Fourth, we send energy technical staff to Federal Disaster Field Offices to provide damage assessments and assistance to States and industry to restore energy services disrupted by natural disasters.

Lastly, we conduct energy assessment conferences to review outlooks on availability of energy supplies, potential problems and proposed solutions.

Question: Why does it require 66 or 67 people?

Answer: The total FTEs for the Emergency Preparedness Program is 66, with 41 FTEs allocated to the Office of Emergency Management and 25 FTEs allocated to the Office of Emergency Planning.

The Office of Emergency Management must be prepared at all times to lead the Department's response to domestic emergencies, either alone or as an active member of disaster response teams organized under the Federal Response Plan, led by the Federal Emergency Management Agency.

To handle these responsibilities with the expertise and timeliness required in emergencies, the Office must maintain not only expert knowledge of energy systems and the likely consequences of their damage, but also specific regulations governing response, emergency management counterparts in State and local government, an Emergency Operations Center capable of 24 hour per day operations, and the personnel needed to staff these and outside activities located at Disaster Field Offices.

When emergency responsibilities do not require their presence elsewhere, Office personnel conduct emergency response training, exercises, and coordination planning with industry representatives, with State and local government representatives and on refresher training for themselves; update the emergency management system in accordance with revised Emergency Management System directives; develop and test procedures and systems to monitor and assess energy supply situations; and provide technical assistance to states to update emergency preparedness plans.

In addition to its focus on planning for energy emergency preparedness, the Office of Emergency Planning must be prepared at all times to lead the Department's response to international emergencies, either alone or as an active member of the International Energy Agency (IEA) under the terms of the Agreement on an International Energy Program. This responsibility requires that experts in international energy markets work routinely and closely with counterparts at the IEA to make sure that energy preparedness plans are developed and coordinated and also to assure that respective emergency policies are not only in concert but, preferably, that they are mutually supporting. Initiatives for building and using strategic stocks of oil are examples of plans and policies in this category.

As to its emergency policy responsibilities, the Office of Emergency Planning is concerned with the level of preparedness reflected in the totality of corporate, State and local and Federal emergency risk reduction plans and initiatives. It is in the nature of emergency planning to wonder whether vital interests are protected and how much protection is enough. Given its responsibility to provide a proper basis for planning to reduce unacceptable risks to the security of the national energy supply, the Office of Emergency Planning is engaged in a continuing program of emergency risk assessments over the longer term (e.g., five years and beyond). These continuing (re)assessments are needed because energy systems, legal and regulatory environments and the national stock of energy consuming capital changes; these factors all have the potential to affect national consequences from energy supply disruptions.

Question: Why does it require $4,700 per person for travel expenses?

Answer: There are two contributing factors for the average cited in your question, which includes lodging and meals for personnel on travel status. First, there are international travel requirements associated with the Department's participation in the International Energy Agency (IEA). The Assistant Secretary for Policy is a member of the IEA Governing Board, which meets four or five times per year. Additionally, the Office of Emergency Planning sends a representative to meetings of the Standing Group on Emergency Questions of the IEA. Also, activities associated with the Petroleum Planning Committee of NATO require periodic international travel to represent the Department. The second factor involves our assistance related to domestic emergencies ranging from floods, tornadoes, and earthquakes to regional power outages. Over the past several years, there have been a number of natural energy-related disasters. On-site travel by our staff to coordinate federal assistance frequently requires extended travel. Finally, periodic travel is necessary to participate with state and local emergency planning bodies, industry and utilities, and to participate in regional tests and exercises.

THURSDAY, MARCH 23, 1995.

ECONOMIC REGULATORY ADMINISTRATION

WITNESS

ROBERT NORDHAUS, GENERAL COUNSEL

Mr. REGULA [presiding]. Okay, next is the General Counsel in the Department of Energy, Mr. Nordhaus, on the Economic Regulatory Administration.

Your full statement will be made a part of the record.

[COMMITTEE NOTE.—The prepared statement of Mr. Nordhaus follows:]

Statement of Robert R. Nordhaus
General Counsel
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

Mr. Chairman, members of the Committee, I appreciate this opportunity to provide testimony in support of the funding request for fiscal year 1996 for the regulatory enforcement activities under the Emergency Petroleum Allocation Act of 1973 (EPAA) formerly administered by the Economic Regulatory Administration (ERA). As you are aware, Secretary O'Leary's reorganization of the Department of Energy placed ERA within the Office of General Counsel. In a further reorganization in November 1994, the functions of the ERA were transferred to other offices with the Office of General Counsel, principally to the Office of the Deputy General Counsel for Litigation.

REGULATORY ENFORCEMENT ACTIVITIES

Although the pricing of petroleum was decontrolled in 1981, our office is charged with the responsibility of seeking restitution for regulatory violations that occurred prior to decontrol. The Department's regulatory enforcement activities have effected $8.7 billion in oil overcharge recoveries. Indirect restitution has been distributed to the States and Territories for use in energy-related programs ($4.7 billion) and to the U.S. Treasury ($1.9 billion). Direct restitution of $1.9 billion has been distributed to identifiable injured parties. To date, over 100,000 petroleum sellers have been audited. Only 19 petroleum overcharge cases remain unresolved and, as a result, staff resources for this effort will shrink from 66 in FY 1992 to about 30 by the end of FY 1995. The claims in those cases total approximately $2.2 billion. However, the amount that ultimately will be recovered cannot be predicted with certainty because of the uncertainties of litigation and the difficulties of collection. Future recoveries from the majority of the pending cases would be distributed to the U.S. Treasury (40%), the States and Territories (40%) and identifiable injured parties (20%). As described more fully below, our objective for FY 1996 is to close out all of these cases through litigation or settlement.

Approximately 40 percent of the overcharge cases pending as of March 1994 have been resolved and closed as of March 1995. At present, most of the 19 remaining overcharge cases are in the latter stages of litigation. Only two cases are pending before the Department's Office of Hearings and Appeals (hearings are completed in both cases); one case is awaiting decision by the Federal Energy Regulatory Commission; 12 cases are pending in various federal district courts; 2 are in bankruptcy courts and 2 cases are on appeal to the Federal Circuit

Court of Appeals. In addition to the overcharge cases, this office also litigates Sub-part V appeals for the Office of Hearings and Appeals (OHA). The Sub-Part V cases relate to appeals of refund determinations made by OHA. There are currently 5 cases on appeal.

FY 1996 OBJECTIVES

Our objectives for FY 1996 are to resolve (through litigation or negotiated settlement) all of the remaining cases and collect as much overcharge monies as we reasonably can. A particular challenge in managing this effort will be to maintain our regulatory enforcement expertise and litigation capability at a level commensurate with the large dollar amount at stake. The reorganization effected by GC in November 1994 will aid in accomplishing this goal. As cases are resolved, I intend to transfer the remaining regulatory enforcement staff to other elements of the Office of General Counsel. In addition, I anticipate significant attrition of the staff through buyouts and retirements.

The FY 1996 budget request for regulatory enforcement activities is for $3.7 million, which will fund 29 full-time equivalent (FTE) employees. The regulatory enforcement staffing continues to decrease as its case load declines, and the FY 1996 funding request reflects this continuing trend. This year's budget represents reductions of $2.0 million (35 percent) and 20 FTE's (40 percent) from the FY 1995 appropriation. By the end of FY 1996, only a small number of FTE's will remain on the regulatory enforcement staff.

I believe that the Department's funding request will adequately support the fulfillment of all regulatory enforcement responsibilities and at the same time remain fiscally responsible when allocating tax dollars to this effort.

I would be happy to answer any questions that the Committee may have.

Opening Remarks

Mr. Nordhaus. Mr. Chairman, members of the subcommittee, my name is Robert Nordhaus. I am General Counsel of the Department of Energy and am also responsible for closing out the oil overcharge program under the Emergency Petroleum Allocation Act. This is the program that formerly was administered by the Economic Regulatory Administration. That latter organizational unit has been merged into the rest of the General Counsel's Office, and we're in the process of trying to phase out the oil overcharge program.

What I want to do is just mention briefly where we are. We're down now to 19 enforcement cases. There are five other non-enforcement cases. We are pursuing in litigation claims aggregating some $2.2 billion. We don't expect to collect that entire amount.

Mr. Regula. Are these all in litigation?

Mr. Nordhaus. Yes, that's what's now in litigation. We have over the years collected approximately $8.6 billion, almost $2 billion of which has gone to the Federal Treasury. With respect to the $2.2 billion, we cannot tell you with any certainty what portion of that will be collected, but about 40 percent of the collections will go to the Federal Treasury.

This year we're seeking an appropriation of $3.7 million for the program. That's down from $5.7 million for Fiscal Year 1995. Our objective in Fiscal Year 1996 is to close out the program, and to collect what we can collect. My personal objective is not to be back here next year asking for more money. We think we can finish off the program with the $3.7 million. I also think it's money well spent for the Federal Government. I can't really tell you what our collection rate will be, but even if it were on the low side, say as low as 15 cents on the dollar, that would mean about $120 million to the Federal Treasury. So I believe it's a program worth pursuing for this additional year, so we can get the money for the Treasury, and close this chapter in our history of regulation.

OIL OVERCHARGE PENDING CASES

Mr. Regula. Would the reason be that you'd only get maybe 20 cents on the dollar is that your cases are not strong or that the companies are not financially solvent?

Mr. Nordhaus. My anticipation is we'll get more than that, but I use that as an example just to emphasize the stakes involved. The reasons we're likely to get less than 100 percent are twofold, as you mention. First, we're not going to win all our cases, and if we settle them, we may settle them for less than 100 cents on the dollar. Secondly, even where we do get judgments, they may not be collectible because many of the entities that the cases are now being litigated against are either in bankruptcy or do not appear to have substantial assets. We're looking at those cases closely, and those which do not hold out any real prospect of collection, we're not going to pursue. I'd say about two-thirds of the dollars involved are against major companies which have substantial assets where there's no question of collectibility.

GENERAL COUNSEL'S BUDGET

Mr. REGULA. What's the total budget of the General Counsel's office within the Energy Department?

Mr. NORDHAUS. By way of background for the record, our office is funded from two different appropriations. The regulatory enforcement function comes out of the Interior appropriation, and we're seeking $3.7 million for that.

Mr. REGULA. Right.

Mr. NORDHAUS. The remainder comes out of the departmental administration account in the Energy and Water appropriation, and our suballocation from that request is $17.8 million, as I recall.

Mr. REGULA. That would cover the entire office other than the $3.7 million that you get from us?

Mr. NORDHAUS. Yes, that covers it, except for a piece that comes out of the Nuclear Waste Fund. I'm not sure how that counts to——

Mr. REGULA. If you were—are you all out of the same office, and it's just an allocation of money?

Mr. NORDHAUS. Most of the personnel who are funded by the Interior appropriation are actually physically in a different building. They're over behind Union Station. Our major office is in the Forrestal Building, and that's where my office is.

Mr. REGULA. If you were put entirely under Energy and Water, you'd need an additional 3.7——

Mr. NORDHAUS. Yes.

Mr. REGULA [continuing]. To your budget there to insure that you would have adequate——

Mr. NORDHAUS. Yes.

Mr. REGULA [continuing]. Resources to finish these cases?

Mr. NORDHAUS. That is the case. We do not have the resources elsewhere in our office, nor the expertise——

Mr. REGULA. Well, since you think you will be out and finished in a year, it would seem logical to just leave it as is——

Mr. NORDHAUS. That would be my recommendation, sir.

Mr. REGULA [continuing]. Give you $3.7 million, close out the cases, and then we're finished with it.

Mr. NORDHAUS. I would hope not to darken your door again. [Laughter.]

Mr. REGULA. Get that in writing. [Laughter.]

And you would hope to bring in another——

Mr. NORDHAUS. Our objective is to close out the program in Fiscal Year 1996.

OIL OVERCHARGE CASE COLLECTIONS

Mr. REGULA. You anticipate it would result in what in dollars?

Mr. NORDHAUS. I don't want to be specific because of the litigation——

Mr. REGULA. Yes.

Mr. NORDHAUS [continuing]. These cases are in litigation, I don't want to try to give the amount—if you'll bear with me——

Mr. REGULA. It would be a substantial sum?

Mr. NORDHAUS. It would be a substantial sum, and, as I said, if we collect only 15 cents on the dollar, it would mean total collections of over $300 million and about $120 million for the Federal Treasury. So——

Mr. REGULA. But the balance would benefit the States, local communities?

Mr. NORDHAUS. Most of these cases are crude oil cases, and the proceeds are generally divided 40 percent for the Federal Government, 40 percent for the States, 20 percent for end users. The percentages vary depending on some of the individual circumstances of the case as to whether it's a so-called product case versus a crude case.

Mr. REGULA. No matter how you do it, the public benefits, whether it's citizens or the State——

Mr. NORDHAUS. Yes.

Mr. REGULA [continuing]. Citizens of the Federal Government——

Mr. NORDHAUS. Yes.

Mr. REGULA [continuing]. Which are one and the same?

Mr. NORDHAUS. And a significant sum of the collections are dedicated to the States for use in programs that would otherwise be funded by Federal appropriations, weatherization, institutional conservation——

Mr. REGULA. I'd be curious on the end users, how in the world do you determine who was hurt?

Mr. NORDHAUS. Mr. Breznay operates this. He runs a claims operation. Most of the claims have been filed and they make periodic distributions to end users.

Mr. REGULA. Would this be a motorist or would it be a business or——

Mr. NORDHAUS. Yes, businesses. It's mostly businesses who make the claims, and we have right now about a billion dollars in escrow accounts which is on the verge of being distributed, not all of it at one time, but we anticipate a significant distribution probably later this year. And that will go out to end users, another chunk. We anticipate that will free up a portion of that billion dollars to go to the Federal Treasury and another chunk to go to the States. And one of the things Mr. Breznay and I are working is getting the money out because we believe that it's time not only to close out the litigation part of the program, but insofar as we're able to do so, get the money out to the public, to the States, and to the Federal Treasury, rather than holding it in escrow.

Mr. REGULA. So, hopefully, he'll be out of business in a year?

Mr. NORDHAUS. Well, that's my objective.

Mr. REGULA. Okay.

Mr. NORDHAUS. But we are faced with litigation and we cannot control the pace of the litigation and the tenacity of those who are on the other side.

ADMINISTRATIVE SUPPORT SERVICES

Mr. REGULA. I note that 20 percent of your budget goes for centralized administrative support services. Is that something beyond your FTEs?

Mr. NORDHAUS. Yes. We pay a portion of the budget in an internal transfer to departmental administration for rent and certain other services. That amount is declining as our overall staff declines. I believe the request for 1996 is around half of what it was for 1995.

Mr. REGULA. So it's an internal transfer?

Mr. NORDHAUS. Yes, that's an internal transfer. We also have a support services contract which we use for certain litigation support services.

Mr. REGULA. Well, staff pointed out to me it's pretty high in that the administrative support services figures out to 30,000 for each of the FTEs. I don't know; that seems like an inordinate amount for that.

Mr. NORDHAUS. That strikes me as a little high, too, and I will raise that with General Durham at the earliest opportunity.

Mr. REGULA. Is he the one that's selling the services to you? [Laughter.]

Mr. NORDHAUS. This is our Assistant Secretary for Human Resources and Administration.

Mr. REGULA. Well, put an explanation for us in the record—

Mr. NORDHAUS. Yes, I will.

Mr. REGULA [continuing]. Because $720,000 is your charge.

Mr. NORDHAUS. Part of that is rent on the building——

Mr. REGULA. Well, I understand that, but still——

Mr. NORDHAUS [continuing]. But I'll do two things. I'll give you an explanation in the record and I see if I can get the number down.

Mr. REGULA. Okay.

[The information follows:]

ADMINISTRATIVE SUPPORT SERVICES

The Compliance Program's FY 1996 budget request includes $720,000 for administrative support services that will be transferred to an account administered by the Assistant Secretary for Human Resources and Administration. The following indicates the purposes for which the funding is to be used:

Service	*Amount (in 000's)*
GSA rent	[1] $185
Base services	[1] 190
Lexis & Westlaw timesharing	90
Computer support staff	140
Computer equipment/maintenance	115
Total	720

[1] Based on percentage of DOE headquarter's population.

Mr. REGULA. Mr. Nethercutt?

OIL OVERCHARGE CASES

Mr. NETHERCUTT. Just a quick couple of questions.

You have 17 cases, roughly—or precisely?

Mr. NORDHAUS. We have 19 enforcement cases and an additional 5 cases which are cases against us, usually disputes about how to divide up money we've already collected.

Mr. NETHERCUTT. I see.

Mr. NORDHAUS. In other words, I operate the part of the program that collects the money; Mr. Breznay operates the part that dispenses it. Occasionally, the dispute's over who's entitled to what. The Department gets sued and those cases end up in the district court or courts of appeals, and we sometimes have to fight those fires before we can get all the money out.

Mr. NETHERCUTT. What are the ages of the cases?

Mr. NORDHAUS. They——

Mr. NETHERCUTT. What do they range from?

Mr. NORDHAUS. They vary. The underlying regulatory program was the Emergency Allocation Act of 1973. All of the violations occurred before 1981, and what's happened is there's been a number of years of rather tenacious litigation, so that the cases have gradually tailed off. I think the ones we've got now all date from—the most recent cases were filed in 1986, I believe, which was the cutoff for filing the cases. And all but three of them are in the district courts or courts of appeals. There are only three at the administrative level now. Our anticipation is, of the 19 enforcement cases, that we should have 17 of those completed within the next year. Two of the cases that are still at the administrative level may take somewhat longer. We also have an active alternative dispute resolution program where we try to settle these cases, so we don't have to litigate them all the way through. But they're old cases and that's why I'm very, very focused on trying to get us out of this program during the next year and a half.

Mr. NETHERCUTT. It's refreshing to have someone come in here and say they're going to eliminate themselves in a sense.

Mr. NORDHAUS. Well, this——

Mr. NETHERCUTT. We don't see it often, but——

Mr. NORDHAUS. This program needs to be history.

Mr. NETHERCUTT. Are the 12 cases that are pending in Federal district courts pre-trial or are you post-trial on all those?

Mr. NORDHAUS. Most of these cases are cases——

Mr. NETHERCUTT. Awaiting a decision or something?

Mr. NORDHAUS. Most of them are decided on pleadings and briefs. It's very rare that these cases have evidentiary hearings because they're reviewing DOE or Federal Energy Regulatory actions where there's already been a hearing at the administrative level. Almost all of our cases in the district courts are either in the final stages of briefing or are past briefing and ripe for decision.

Mr. NETHERCUTT. I'm just trying to get a sense of, you know, what's left and how many of these FTEs are lawyers and how many are nonlawyers.

Mr. NORDHAUS. I don't have that. I can give that number to you for the record.

[The information follows:]

ATTORNEY FULL-TIME EQUIVALENTS

We anticipate that less than 20 of the 29 FTE's requested for FY 1996 will be used for attorney positions.

Mr. NORDHAUS. We have about 44 total on the rolls. We're trying to get 11 of them off of the oil overcharge program rolls, and doing other work in the General Counsel's office, and we're hoping to be able to do that in the next month or so. We should have about 20 lawyers on the program within, I'd say, within the next month, and that number will drop as the cases finish off and the lawyers either take buyouts or move them into other work for the rest of the General Counsel's office, where we have a number of pressing needs elsewhere in the office. We're not making new-hires anymore other than a couple of people in the pipeline; we're doing internal transfers and trying to move our people who are finishing these cases, these oil overcharge cases, up off the Interior appropriation and onto other work as rapidly as possible. We're having some success in that. They're good people and it will work out, I think.

Mr. NETHERCUTT. So this program, this regulatory enforcement program, will be phased out, but perhaps the cost will remain in the General Counsel's office?

Mr. NORDHAUS. Well, my hope is——

Mr. NETHERCUTT. I just wonder if there's going to be a net savings, ultimately, a net savings.

Mr. NORDHAUS. In Fiscal Year 1996, we will have approximately 5 percent fewer FTEs for the whole operation——

Mr. NETHERCUTT. Okay, that's what I was trying——

Mr. NORDHAUS [continuing]. Than we did in Fiscal Year 1995. The budget, the aggregate budget requests, the sum of the two budget requests will be about equal because of buyout costs and increases in salaries, but the FTEs will go down and they'll continue to go down in 1997 for the whole operation. So we're looking at a path that will take us down about 5 percent a year for the next couple of years.

Mr. NETHERCUTT. Thank you.

Mr. REGULA. Now your total number—the total number in the General Counsel's office in FTEs is how many?

Mr. NORDHAUS. Two twenty-three this year. It will be 211—I'm sorry, 214 next year, and we anticipate down close to 200——

Mr. REGULA. Approximately, what, 29 of these are devoted to this project?

Mr. NORDHAUS. We've asked for authority on a yearly average to have a staff of 29 FTEs in the oil over charge program for Fiscal Year 1996, and that's down from 44 onboard right now. That's going to drop down. We're trying to move them over as fast as possible. We just finished two major hearings and we're about to settle another case, another two cases, and as those cases get off the books, we can push the people over into the other part of the operation or——

Mr. REGULA. So you're saying your cost for the year will be about $3.7 million?

Mr. NORDHAUS. Yes.

Mr. REGULA. Thank you very much.

[COMMITTEE NOTE.—Additional committee questions and answers for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Economic Regulatory Administration

Transfer of Function

Question: You expect to have only 19 cases remaining unresolved at the end of fiscal year 1995. Why do you need to keep a separate entity within the Office of General Counsel in fiscal year 1996 to address these cases?

Answer: The Office of General Counsel was reorganized in November 1994 and the functions of the ERA were transferred to other offices within the Office of General Counsel, principally to the Office of the Deputy General Counsel for Administrative and Regulatory Litigation. This spring, a further streamlining of the Office of General Counsel will eliminate the Office of Deputy General Counsel for Administrative and Regulatory Litigation entirely and move almost all of the oil overcharge functions to the Office of the Deputy General Counsel for Litigation.

Question: How much work is involved?

Answer: There are 19 cases involving 17 overcharge claims, and five other cases in which the Department is the defendant. The additional work is described below:

Overcharge Cases

Two cases are pending before the Department's Office of Hearings and Appeals (OHA). Evidentiary hearings in those cases have been completed and they are currently being briefed; oral arguments would follow the briefing process and then the cases would be ripe for decision. If the decision is adverse to the respondents, those cases could then be appealed to the Federal Energy Regulatory Commission (FERC). At FERC, the cases would involve briefing and oral argument. A decision adverse to the respondents can then be appealed, on the record, to the federal district court of appropriate venue, and the district court decision (usually on the basis of cross motions for summary judgment) can be appealed to the Court of Appeals for the Federal Circuit. The amount at stake in these two cases is about $1.4 billion.

One case is pending before the FERC, whereupon it is subject to the same appellate process as described above.

One case in a federal district court is in an extensive discovery process; a September 1995 trial is scheduled on one factual issue. Upon decision, an appeal could be taken to the Federal Circuit; briefing and oral argument would then be necessary.

Two cases involve a claim in bankruptcy and the companion case (regarding the same claim), which is an adversary proceeding is scheduled for trial in September 1995.

Two cases are being briefed before federal district courts; upon decision, they would be subject to appeal to the Federal Circuit; briefing and oral argument would then be necessary.

Four cases have been briefed to federal district courts and are therefore submitted for decision. If appeals are taken to the Federal Circuit, briefing and oral argument would be necessary.

Recent favorable judgments were entered in five cases at the district court level, and the statutory 60-day appeal time is running in each of those cases. If appeals are taken to the Federal Circuit, briefing and oral argument would be necessary.

Following a judgment favorable to the Department, two parallel appeals were filed, one in the Federal Circuit and the other in the Fifth Circuit Court of Appeals. If the Department's motion to dismiss the Fifth Circuit appeal is granted, then the case would be briefed and argued before the Federal Circuit.

Defensive Cases

One case, which is an appeal directly to federal court from an OHA denial of the firm's application for refund from moneys already collected, is being briefed in federal district court. The district court's decision can be appealed to the Federal Circuit.

Three similar appeals of OHA determinations in refund proceedings are submitted for decision to the district courts.

In one case in which the firm asserted the Department's breach of a 1980 Consent Order, following a Federal Circuit decision favorable to the Department, the appellant has sought *in banc* rehearing and the Federal Circuit has directed that the Department file a response. (In another case very recently decided in the Department's favor by the Federal Circuit, *in banc* rehearing might also be sought, as the decision of the panel was not unanimous.)

Question: If the Committee were to recommend that this function be consolidated with the other activities of the General Counsel and funded in the Energy and Water appropriation, to what extent would you need legislative language in that bill to allow you to complete this work?

Answer: The Department would not recommend that the Committee take this action for FY 1996, since no provision was made in the Energy and Water budget to fund these activities. The Department does not anticipate requesting any funding for this function in FY 1997 from

Interior. Were the committee to decide to fund this activity out of the Energy and Water appropriation for FY 1996, it does not appear that any legislative provision need be included in the Interior and Related Agencies appropriation bill. However, report language explaining the transfer would assist the Department in assuring that the activities were adequately funded out of the other appropriation.

Question: If bill language would be required, please provide suggested language for the record.

Answer: Suggested report language is:

> The remaining petroleum overcharge litigation and related functions are now handled by the Department of Energy's Office of General Counsel, which is funded under the Energy and Water appropriation. These functions, for which a budget request of $3.7 million was submitted, will be performed under the Energy and Water appropriation for FY 1996.

Case Resolution

Question: Please provide a list of all cases resolved in fiscal year 1994, including the dollar value?

Answer: The following cases were resolved in FY 1994:

Case	Amount in millions	Nature of Resolution
McWhirter Distributing	$ 0.6	Win - FERC
Storey Oil Co.	<0.1	Partial win, with remand to OHA
Est. of M. McGreevy	<0.1	Settlement
Dane Energy, Inc.	0.9	Settlement
Bayport Refining, Inc.	78.2	Win - FERC Joint & Several Liability
SunBehm Gas, Inc.	N/A	Win - Court Subpart V Appeal
Kash N' Karry, Inc.	N/A	Win - Court Subpart V Appeal
J. W. Akin	0.8	Loss - Court
T. E. Reserve/Allison	340.0	Win - FERC

Merit Petroleum	212.5	Win - FERC Joint & Several Liability
Mapco, Inc. } Mapco Int'l., Inc. } In re: Mapco, Int'l.}	7.3	Settlement
Concord Petroleum, Inc.	14.3	Win - FERC Joint & Several Liability
Mutual Petroleum Mktg.	116.8	Win - FERC
Shepherd Oil, Inc.	4.0	Dismissal - Bankruptcy Discharge
Nu-Way Oil Co.	N/A	Plaintiff Voluntarily Dismissed
Aminoil, Inc.	0	Dismissal - No Stripper Well Deficiency

Question: What cases have been resolved so far this year?

Answer: The following cases have been resolved in FY 1995:

Case	Amount in millions	Nature of Resolution
Est. of Chas. Curry	$ 0.1	Settlement
Murphy Oil Corp.	10.7	Settlement
Malcolm Turner	0.1	Settlement
A. Meduna/T. Battle	0.1	Settlement
National Hydrocarbons	26.1	Win - Court Plaintiff Dismissed Appeal
Scruggs Energy, Inc.	22.5	Win - Court
Mullins, *et al*.	N/A	Win - Court Subpart V Appeal
Shore Oil Co.	0.7	Dismissal - Bankruptcy Discharge

Question: What are the remaining cases and what is the current status of each of them?

Answer: The status of the remaining cases is listed below:

Cases Involving Overcharge Claims

Forum	Case	Claim Amount with Interest (in millions)	Status
OHA	Chevron	$ 295.5	Evidentiary Hearing completed; briefing through 7/95; oral argument scheduled 8/95.
OHA	OXY	1,122.7	Evidentiary Hearing completed; briefing through 5/95; oral argument in 6/95.
FERC	Storey Oil	0.2	Briefing and oral argument completed; awaiting ALJ's decision and Commission decision.
District Court	In re Lajet & Pender v. Texas Napco	245.2	Bankruptcy claim and adversary proceeding; trial scheduled 9/95.
District Court	The Crude Co.	6.2	Discovery ordered; 9/95 trial scheduled on one factual issue.
District Court	Gear Petroleum	1.7	Briefing to be completed in 6/95.
District Court	Elk Trading/Davis	41.1	Briefing to be completed in 4/95.
District Court	Petrade	16.0	Submitted for decision.
District Court	Morrison Petroleum	24.9	Submitted for decision.
District Court	Rice Oil	1.0	Submitted for decision.

Forum	Case	Claim Amount with Interest (in millions)	Status
District Court	Murfin/Champlin	6.5	Submitted for decision.
District Court	Houston Oil/J. Imperator	271.7	Judgment for DOE entered; appeal period running.
District Court	Phoenix	126.1	Judgment for DOE entered; appeal period running.
District Court	Pelstar/Harvison	43.6	Judgment for DOE entered; appeal period running.
District Court	P. Elliott	14.2	Judgment for DOE entered; appeal period running.
District Court	Conoco, Inc.	8.9	Judgment for DOE entered; appeal period running.
Federal Circuit & 5th Circuit	CMC Oil Co.	6.7	Appeals filed to both 5th Circuit & Federal Circuit Courts of Appeals; DOE moved to dismiss 5th Circuit appeal for lack of subject matter jurisdiction; reply memorandum due 3/17/95; in Federal Circuit appeal, DOE's brief due 5/30/95.

TOTALS $2,231.7 million = 19 cases/17 Overcharge claims

Miscellaneous & Subpart V Appeal Cases

Forum	Case	Status
District Court	Goodyear Tire	Briefing complete in 4/95.
District Court	Hydrocarbon Trading	Submitted to court for oral argument and/or decision on X-MSJs since 12/93; new judge assigned 7/5/94; status hearing 9/2/94 and case taken under advisement; Judge Kessler stated she hoped to decide it by 12/31/95.
District Court	M. Spiegel & Sons	Submitted for decision.
District Court	Siegel Oil	Submitted for decision.
Federal Circuit	Oryx Energy	Following decision favorable to DOE, Oryx requested rehearing in banc; the Court directed that a DOE response to Oryx's petition be filed by 3/28/95.
TOTAL	5 cases	

Stripper Well Cases

Question: What amount of stripper well deficiency funds did you collect in 1994 and from whom did you collect them?

Answer: In 1994 a total of $504,640 was collected from Wood Oil Co., the Estate of Milton McGreevy and the Estate of Charles Curry. Two deficiency cases, involving $13 million, are still being litigated.

Question: How do the stripper well cases differ from your other case load and how long do you expect to continue collecting stripper well deficiency funds?

Answer: The principal difference between the stripper well cases and the other pending cases is that the stripper well cases were initiated more than 15 years ago by some 50 or so firms who sued the Department in various federal district courts, seeking declaratory and injunctive relief on the Department's application of the regulations governing the qualification for classifying crude oil as "stripper," and therefore exempting such oil from the ceiling prices otherwise imposed by the regulations. DOE filed counterclaims and the litigation was consolidated as Multi-District Litigation (MDL-378) in the District Court for Kansas. That court allowed the oil to continue to be priced as stripper, but ordered that the plaintiff firms deposit the difference between the price actually charged and the otherwise-applicable ceiling price into a court-administered escrow account. By 1985, the Department had prevailed at the Temporary Emergency Court of Appeals on the underlying legal dispute (whether water injection wells could be counted as producing wells for purposes of determining if production was less than 10 barrels a day per well - the essential requirement for stripper classification). Approximately $1.5 billion was disbursed from the escrow account pursuant to the terms of the 1986 Stripper Well Agreement. Since 1986, based upon documents obtained in discovery, the Department determined that the deposits into the escrow account 38 of the firms were not in compliance with the court's order, that is, deficient.

Through litigation and settlement, all but two of the deficiency disputes have been resolved. One case, for $9 million of deficiency, was recently decided by the district court and is likely to be appealed to the Federal Circuit Court of Appeals. The other case, for $4 million, has been briefed and argued at the district court and awaits decision by that court; appeal is likely in that case, as well. We estimate that both cases will have been briefed and argued before the Federal Circuit by the end of 1995.

Field Offices

Question: How many people are in your Dallas Field Office?

Answer: There are 3 people at our Dallas post-of-duty and 2 people at our Houston post-of-duty.

Question: Why do you need to continue the Dallas office in fiscal year 1996?

Answer: We intend to close that office at the end of FY 1995.

Question: When would you eliminate this office?

Answer: The Dallas post-of-duty will be closed by September 30, 1995. Our other office outside Washington, the Houston post-of-duty, will be closed by March 31, 1996.

Question: Is this a stand-alone office or are your people co-located with another group? Please explain.

Answer: These are stand-alone offices located in GSA owned or leased space. Administrative support services are provided by the General Counsel's Office in Washington.

Question: What are the expenses associated with maintaining the Dallas office in fiscal years 1995 and 1996?

Answer: For FY 1995, the cost of maintaining the Dallas and Houston posts-of-duty will be $138,000. In the FY 1996 request we originally budgeted $132,000 for this item, but since both offices are now scheduled to be closed by March 31, 1996, the revised cost is presently estimated at $66,000. This new cost assumes that, due to the terms of the leases, we may be locked into payment of GSA rent for both offices through March 1996.

Reimbursement to EIA

Question: How much do you pay EIA to use their mainframe computer?

Answer: The FY 1996 budget includes $12,000 reimbursement to EIA for the use of their mainframe.

Question: Why do you need mainframe computer access?

Answer: A number of EIA mainframe database programs were developed for ERA during the mid-1970's and we continue to utilize several of them today. Our need for these programs will cease by the end of FY 1996.

Question: To what extent are you paying for using EIA's data vs. using the EIA computer for your own applications?

Answer: We are using the EIA computer only for the ERA programs residing on it.

Miscellaneous Expenses

Question: How much is budgeted for training in fiscal year 1996? How does that compare with fiscal year 1995?

Answer: The FY 1996 budget includes $12,000 for training. This same amount was included in the FY 1995 budget.

Question: What training is funded with this money?

Answer: These funds provide for courses not otherwise available within the Department's training program. They primarily include legal, supervisory and managerial, computer, and financial courses.

Question: What do you fund as "other miscellaneous expenses"? Please provide details for the record.

Answer: The FY 1996 budget includes $30,000 for "other miscellaneous expenses" not otherwise available within the Department. These expenses primarily include legal publications and subscriptions, court transcripts, and overnight express delivery services.

QUESTIONS SUBMITTED BY CONGRESSMAN SIDNEY YATES

Economic Regulation

Case Load

Question: As of December 1994, the Economic Regulatory Administration and its sole remaining activity, the Compliance program, was realigned under the Office of General Counsel. How many cases remain to be resolved from the oil pricing and allocation regulations?

Answer: As of February 28, 1995, 19 cases remained unresolved.

Question: What is the potential dollar value of the remaining cases?

Answer: The total claim value on the remaining cases is $2.2 billion.

Question: How long do you estimate it will take to resolve these cases?

Answer: Virtually all of the overcharge cases which are now pending in the federal courts should be resolved by the end of FY 1996. Unless resolved by settlement, or by adverse decisions at OHA or FERC, the two cases pending before the OHA will still be active, but by the end of FY 1996, they would be in federal court. However, in that event, we would not anticipate needing a separate appropriation to litigate these cases in FY 1997.

Question: As you resolve the cases, what happens to the money recovered from your actions?

Answer: Pursuant to the 1986 Stripper Well Agreement, moneys recovered from crude oil overcharges are distributed 40% to the U. S. Treasury, 40% to the 56 states, territories and insular possessions, and 20% is reserved for end-user claimants. All but approximately $1 million of the $2.2 billion of pending overcharge claims is related to crude oil overcharges. Recoveries attributable to finished petroleum product overcharges would be distributed to claimant purchasers of those products, and any remainder amount is used for statutory conservation programs.

Question: Is the staff working on these overpricing cases dedicated solely to these issues or are they also assigned to other work in the General Counsel's office?

Answer: Staff lawyers responsible for particular oil overcharge cases are assigned other work in the General Counsel's Office when briefing or hearing schedules do not require full time work on their oil overcharge cases. Once the cases are resolved, the lawyers are transferred and assigned to other work.

THURSDAY, MARCH 23, 1995.

OFFICE OF HEARINGS AND APPEALS

WITNESS

GEORGE BREZNAY, DIRECTOR, OFFICE OF HEARINGS AND APPEALS

Mr. REGULA [presiding]. The last group today is the Office of Hearings and Appeals, Mr. Breznay.

Mr. BREZNAY. Right. Thank you, Mr. Chairman.

Mr. REGULA. Your statement will be made a part of the record.

[COMMITTEE NOTE.—The prepared statement of Mr. Breznay follow:]

Statement of George B. Breznay
Director, Office of Hearings and Appeals
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

Mr. Chairman, members of the Committee, I appreciate the opportunity to appear before you today to discuss the operations of the Office of Hearings and Appeals.

The Office of Hearings and Appeals is responsible for conducting hearings and issuing the initial decision of the Department with respect to any adjudicative proceedings which the Secretary may delegate, except those within the jurisdiction of the Federal Energy Regulatory Commission. Among other things, our jurisdiction encompasses contested complaints filed under the DOE Contractor Employee Whistleblower Protection Program, Proposed Remedial Orders issued by the former Economic Regulatory Administration, and revocations or denials of DOE security clearances. The Office analyzes and decides appeals requesting review of any determination reached by any other official within the Department under the jurisdiction of the Secretary, including initial determinations under the Freedom of Information Act, the Privacy Act, the payments-equal-to-taxes (PETT) provisions of the Nuclear Waste Policy Act of 1982, as amended, the special assessment provisions for the Uranium Enrichment Decontamination and Decommissioning Fund under the Energy Policy Act of 1992, and the reimbursement of costs of remedial actions at active uranium or thorium processing sites under the Energy Policy Act of 1992. The Office is also responsible for deciding Applications for Exception from the generally applicable requirements of a rule, regulation or order of the Department. It develops and implements procedures under the Petroleum Overcharge Distribution and Restitution Act of 1986 for refunding oil overcharge funds obtained pursuant to Departmental consent orders, remedial orders, and court orders to injured parties. The Office also analyzes Petitions for Special Redress seeking "extraordinary relief" apart from or in addition to any other remedy provided by the Department's regulations.

Our FY 1996 budget request is for $6.8 million, all of which will be used to support a staff of 81 full-time equivalent employees. I believe this staffing level is sufficient for current program needs.

I will turn first to the oil overcharge refund work we have done in the last year. These are proceedings in which we process refund claims submitted by parties who were injured by oil overcharges. The refunds are paid from overcharge escrow monies received through consent orders or other DOE enforcement actions. During FY 1994, we processed 7,800 refund applications and paid $25.5 million in refunds by check sent directly to injured claimants. In the first part of FY 1995, significant progress continues in the refund area. For example, during the first quarter, we processed 2,000 refund applications and distributed $5.7 million to claimants.

I am pleased to report that our inventory of open refund cases dropped below the 10,000 case level for the first time in seven years. (Inventory has been as high as 66,000 cases in the past.) Cumulatively, as of January 31, 1995, we have resolved 217,000 of the 225,000 refund claims received, leaving 8,000 refund cases yet to be processed. These applications are filed by individuals, large and small businesses in and outside of the oil industry, airlines, utilities, municipalities, housing authorities, and other governmental entities--virtually every segment of the economy. In all, during the course of this program to date, we have made direct restitution refunds to these claimants amounting to $739.4 million. The average value of the refunds paid in all of these proceedings is $3,829. We have completed making payments in the Exxon, Shell, Mobil and Amoco (global) refund proceedings, and we are close to winding up the three active remaining major refiner product refund proceedings--Atlantic Richfield Company, Texaco Inc., and Gulf Oil Corporation. The average value of the refunds paid to date in the Texaco proceeding is $5,272, the highest in any case.

Considerable work in the refund area remains to be done. The remaining 8,000 cases are the most complex we have received and tend not to be susceptible to "batch processing." Therefore, our case closure rates for refund applications will decline this year. During the remainder of FY 1995 and in FY 1996, we will continue to process these refund applications as promptly as possible, while attending to the continuing flow of other types of cases. I expect inventory levels for refund cases to be substantially reduced by fiscal year end.

Our open case inventory figures do not take into account the resources that will be devoted this year to make a third refund payment to applicants in the "crude oil" refund proceeding. We received over 99,000 refund applications in the crude oil proceeding. This is our biggest refund proceeding, and it was made more complex by the fact we did not know the total amount of crude oil money that would be available for refunds. Therefore, we adopted a "staged" approach whereby each time an application was approved, we paid a refund based upon the total amount of crude oil money then available, with the stipulation that further refunds would be paid in the future. So far, as applications and funds have been received, we have made two refund payments totaling $272 million to approximately 87,145 applicants. The average value of the refunds paid to these claimants was $3,117. We are now preparing to send them a third refund payment totaling $272 million which will result in aggregate payments of $544 million to the claimants in the crude oil proceeding. This will require a very extensive effort. We will be able to mail out supplemental refund checks as soon as each applicant verifies its address and files the necessary IRS form. We will make these additional interim payments to claimants only if they would get refunds above $50.

As we make progress in processing refund cases, we locate additional amounts of the DOE's oil overcharge monies that will not be needed for direct restitution to injured parties. These "excess" funds are made available to the States under the Petroleum Overcharge Distribution and Restitution Act of 1986 (PODRA) in lieu of appropriated funds for four Federal energy conservation programs. We made the FY 1995 distribution of these "excess" monies in November 1994, transferring $20.9 million under this deficit reduction provision. In FY 1996 as well, we expect to distribute a substantial amount of "excess" oil overcharge monies to the Federal treasury under PODRA. On March 2, 1995, we sent the Subcommittee our estimate that the amount of "excess" funds available for distribution in FY 1996 will be at least $8.6 million. During this time of fiscal austerity, making these "excess" monies available for deficit reduction is an important function of this office.

We also distributed $10.1 million during FY 1994 to the States as their share of crude oil overcharge funds under the Stripper Well Settlement Agreement. The States must use these monies to fund energy conservation programs as a means of making indirect restitution to their residents.

Eleven oil overcharge enforcement cases and related matters were concluded in the last year. Like all enforcement matters, these were contested cases--mainly because of the large sums of money at issue--and they involve complex legal and factual issues requiring written opinions explaining our determinations. Nearly all of our determinations are sustained on appeal. With only two proposed remedial order cases still active, I anticipate that we will soon complete our work in the enforcement area.

During the last year, we were actively at work in other program areas and we anticipate that the number of these cases will increase in FY 1996. We issued written determinations in 242 of these cases. These submissions involved Freedom of Information Act and Privacy Act appeals, exception requests, personnel security clearance revocation and denial cases and contested DOE contractor employee whistleblower cases. This level of activity represents an increase from prior years that I expect will continue as our new case receipts shift away from refund applications. Several of these areas deserve mention.

In FY 1993, the OHA was vested with the authority to conduct fact-finding hearings and issue initial agency decisions on contested "whistleblower" complaints brought by employees of DOE contractors. To date we have received 11 of these cases. DOE's regulations require decisions to be issued within 30 days after the close of the record, and all of our cases have been decided within that time frame. In the interests of furthering Secretary O'Leary's goal of openness and enhanced communication at DOE, we are publishing all whistleblower decisions. Ultimately, I expect this will promote a better understanding of the Secretary's policy of "zero tolerance for reprisal," and contribute to changing the culture at DOE's contractor-operated facilities.

OHA has recently undertaken another new task--conducting security clearance revocation and denial hearings and reviews that were previously contracted out by the Office of Security Affairs. A DOE or contractor employee, whose access to classified matter or special nuclear material is denied or suspended, is entitled to administrative review. This review process at the Department of Energy includes an evidentiary hearing followed by an initial opinion and an appeal of that determination. Under regulations effective last summer, my office now performs these functions for the Department. Because hearings in these matters must be held at the place of employment of the party involved, they involve an increased amount of travel for us, and consequently, more staff time. Fortunately, staff resources which are becoming available from reductions in the compliance and refund case work can be used for these security clearance cases. We expect to be increasingly active in this area. As of March 1, 1995, we had received 22 of these cases. DOE's regulations require security clearance hearings to be held within 90 days after OHA receives a hearing request. Our Hearing Officers are also required to issue their opinions within 30 days after the close of the record. We are meeting these deadlines.

We have also begun to publish decisions on security clearance matters. This will disclose the standards used to decide them, and further a more open, uniform and fair process. Of course, great care is being and will be taken to protect the privacy of the individuals involved. Decisions in these cases had previously been closely held, and were not made available to the public.

In January 1995, we held a one week evidentiary hearing on an appeal by Benton County, Washington on the amount of payments-equal-to-taxes (PETT) the County should receive under the Nuclear Waste Policy Act of 1982, as amended. The County is challenging the determination by DOE's Richland Office that it should receive a PETT amount of $450,000 based on site characterization activities at the Basalt Waste Isolation Project on the Hanford Nuclear Reservation. According to the County, it should receive a payment of $45 million. This is a case of first impression that involves complex issues.

Finally, we are now receiving appeals of special assessments to domestic utilities for payments into the Uranium Enrichment Decontamination and Decommissioning Fund established under Title XI of the Energy Policy Act of 1992. These cases also present issues of first impression involving the proper accounting treatment under the statute and DOE's regulations of transactions in the secondary market for "separative work units" (i.e. low-enriched uranium reactor fuel) purchased by utilities from the DOE and its predecessors.

This concludes my prepared presentation. I would be happy to respond to any questions which you might have.

OPENING REMARKS

Mr. BREZNAY. Mr. Chairman, I'm George Breznay. Congressmen, I appreciate the opportunity to be here to speak about the request for the Office of Hearings and Appeals in 1996.

My written statement takes a snapshot of the kind of work we do, and I don't want to take the time to go over that. It speaks for itself. What it may not indicate is that there's kind of a dynamic going on right now at the office. Certain kinds of work are diminishing in importance and new work is coming on. So we are a changing office. In fact, we had to lobby to get some of the work that's coming in to take the place of the oil overcharge-related work that did occupy us in the past. We put our hand out to do some of the security clearance-related work, for example; that's now an active part of what we do. We have 25 of those cases, and they take us out into the field to conduct evidentiary hearings, considering whether a clearance should be restored, a security clearance for a DOE or a contractor employee.

Mr. REGULA. To do work that's sensitive militarily?

Mr. BREZNAY. For whatever reason, at the field installations many of the workers tend to have Q clearances. I think the aggregate number is trending down, and that's one of the reasons why it's hard to predict exactly what the volume of that work will be for us. But, according to one study, when this adjudicatory work was contracted out, it cost about $850,000 a year to do it and we're taking it on with no change in our staffing or financial request.

We were at one time in kind of a frenzy with the refund casework that's kept us quite busy for a long time. Our inventory has been as high as 66,000, and now you'll see from our material that we're down to approximately 8,000 cases. So we're nearing the end of that particular effort. I think it's a worthy effort. The restitutionary side of what the Department's been involved with is an important one, and we have given out, through our proceedings, over $800 million to individuals all around the country. Of those 8,000 that are remaining, 5,000 are in the crude oil proceeding and the remaining 3,000 are in product cases.

OIL OVERCHARGE CASES

I should point out that in the crude oil proceeding we're looking toward, before the summer's over, to have distributed another $270 million to claimants in that proceeding. In the aggregate, we have——

Mr. REGULA. What gives rise to those claims? You said you're going to distribute this money to claimants.

Mr. BREZNAY. Right.

Mr. REGULA. But who are the claimants and why do they have a claim?

Mr. BREZNAY. Well, we advertised the fact that——

Mr. REGULA. This is all from overcharges?

Mr. BREZNAY. Yes, it's all overcharge money.

Mr. REGULA. Okay.

Mr. BREZNAY. So we advertise it regionally or in a particular refiner's distribution scheme. The crude oil overcharge proceeding really affected all American enterprises across the Nation. So we have roughly 1 out of every 1,000 people in the United States who filed a refund claim with OHA, 225,000 cases.

You asked earlier how we calculate injury. If we were to do it with mathematical certainty, we'd be here forever, but with the benefit of certain assumptions and presumptions, you can divide up the oil overcharge pot equally and then firms who come in can claim a pro rata share of the overcharges. The economics of the oil overcharges, particularly in the crude oil area, resulted in basically all refined products going up by a small amount. So we give people back that part that they paid above what they should have paid.

Mr. REGULA. If you give it back to the crude oil purchaser, in the meantime that entity has added it to the price of the finished product. So isn't that a windfall for the crude oil producer?

Mr. BREZNAY. It would be if we refunded it to the middle man, but we don't do that in the crude oil proceeding. It's really for end users. So it's where the product was actually put to a final use.

Mr. REGULA. Okay.

Mr. BREZNAY. You and I could file a claim because we bought gas at the pump, but the claim would be too small. So we hear from small firms, municipalities, hospitals, Fortune 500 companies, the whole gamut of business operations.

Mr. REGULA. You get class action suits where somebody purports to represent consumers?

Mr. BREZNAY. We've never taken one of those. We discourage it. Public utilities come in and they, in a sense, stand in the shoes of their customers because, when they paid more for residual fuel oil, they just added it to their increased cost. So we insist that they refund the money on a dollar-for-dollar basis to their customers. So that's the kind of class refund, but it operates efficiently and there aren't any lawyers involved in that one.

Mr. REGULA. That makes it efficient. [Laughter.]

How about that, George?

Mr. NETHERCUTT. Off the record or on the record? [Laughter.]

Mr. REGULA. We're both lawyers.

So the money that Mr. Nordhaus collects you, in turn, will distribute?

Mr. BREZNAY. That's correct.

Mr. REGULA. To claimants?

Mr. BREZNAY. No, not all of it because in the crude oil area you take that 40/40/20 percent split. So we get the 20 percent for our proceeding.

Mr. REGULA. But when he's out of business, you'll be out of business then?

Mr. BREZNAY. Well, we're a little bit farther down the pipeline. In other words, he's on the collection end—

Mr. REGULA. Right.

Mr. BREZNAY [continuing]. And, to some extent, in defending refund decisions that we make—I don't want to minimize that, but for that aspect of his work that ends when he collects the money, ours in a sense begins on the refund side. So we'll take——

Mr. REGULA. But, eventually, they'll be there?

Mr. BREZNAY. We're phased a little later and should finish up later.

Mr. REGULA. Mr. Nethercutt?

Mr. NETHERCUTT. Thank you.

COLLECTION OF ATTORNEYS' FEES

I'm interested to know—I looked over your statement—any opportunity to collect attorneys' fees in these cases, in these contested cases that you're dealing with, or is that your function?

Mr. BREZNAY. Well, it's really not our function, but some of our claimants are represented by attorneys, and they, naturally, get a fee. That's a private contractual matter between the attorney and the client. We've tended to encourage people to file directly. In the crude oil proceeding only 13,000 people have been represented by services. The vast majority have filed themselves, and we work with the claimants and we don't feel it's our job to turn down a claim, but rather to see if they have a valid one. So we'll help them out, and attorneys' fees are really a matter between them and their counsel, if they have one.

BENTON COUNTY, WASHINGTON CASE

Mr. NETHERCUTT. What about—I notice in your statement this reference to a Benton County case, payments equal the taxes under the Nuclear Waste Policy Act of 1982. You said, of this case, your first impression is that it "involves complex issues." Can you elaborate a little bit on that, as to what's the nature of the case and what's——

Mr. BREZNAY. I thought you might be interested in that one.

Mr. NETHERCUTT. It's not my district, but it's in my State.

Mr. BREZNAY. Okay, Benton County has a claim pending for the site characterization work that occurred at the Hanford facility in anticipation of a nuclear waste storage site being located there. Now, eventually, a decision was made not to locate one there but at the Yucca facility. But in the years when it was there the Department is obliged, under the Nuclear Waste Policy Act, to make payments equal to taxes. Now that's a phrase that's easy to say but hard to apply because the County and the Hanford folks who represented the Department in the administrative hearing have vastly different ideas about what an appropriate level of payment for taxes is. Indeed, it's a strange concept just to try to imagine what the market value of a nuclear waste dump is, and you're supposed to look to State law really to decide what the property taxes would be.

Mr. NETHERCUTT. Sure.

Mr. BREZNAY. Considerations like resale value, what it would fetch on the open market, and those kinds of questions are important, but, obviously, in a case like this it's not the end of the story because, if it were, I think the value would be very low. The parties, as I say, are far apart, and it wouldn't be right for me to say where we are, but we held a hearing in January. It took a full week of a list of witnesses. I think there were about 15 or 20 witnesses. So briefing is still going on, and by the end of this month we should have all the responsive briefs in.

Mr. NETHERCUTT. What will be the next step after the briefs are in?

Mr. BREZNAY. We'll have to consider whether to have an oral argument and we'll see whether they want an oral argument first, but assuming that's done, then the case would be ripe for a decision at the agency level. And, as I recall, since this is really an appeal of a determination to give a certain level of payment equal to taxes to the county, the appeal decision would represent the final Departmental decision on the subject, and it could be appealed, I think it's the court of appeals.

Mr. NETHERCUTT. Ninth Circuit.

Mr. BREZNAY. Federal court of appeals.

FY 1996 BUDGET REQUEST

Mr. NETHERCUTT. Right. What is the level—let's see, your budget request is $6.8 million? How does that compare to last year?

Mr. BREZNAY. Basically, we've been flat on the employees, right around 80. The $6.8 million is a slight increase, but, basically, it's flat compared to the last few years.

Mr. NETHERCUTT. Don't misunderstand my question. I'm just wondering where would you see the possibility for any reductions in the coming fiscal year budget, if that were the decision of this committee? Can you say at this point? Would it be staffing? Would it be administrative costs?

Mr. BREZNAY. Staffing is the place where we would look to—we'd have to seek attrition——

Mr. NETHERCUTT. Right.

Mr. BREZNAY [continuing]. Or find some way to reduce our overall staff. The effect of that in the refund area would be to slow down adjudications, and I would urge this subcommittee that, since we're close to the end, that we not slow that down too much. When we're through with the refund process, the money is excess and either goes to the States or to the Federal Government. So there's a nice deficit-reduction impact that comes after we're through with a particular batch of refund cases. But the short answer is, yes, it would be a reduction in staffing.

Mr. NETHERCUTT. Your caseload, it looks like, is winding down or going down, I see, based on your testimony, below the 10,000 case level?

Mr. BREZNAY. Receipts are definitely down in the refund case area, dramatically.

Mr. NETHERCUTT [presiding]. I see. That's all I have.

Since the chairman's going to be detained a little bit longer, the hearing will be adjourned, if there are no more questions or no more comments on your part.

Mr. BREZNAY. No.

Mr. NETHERCUTT. Thank you for coming today.

Mr. BREZNAY. Thank you, Congressman.

Mr. NETHERCUTT. Thank you.

[COMMITTEE NOTE.—Additional committee questions and answers for the record follow:]

Additional Committee Questions
Office of Hearings and Appeals

Non-Compliance Filings and Refund Applications

Question: What are non-compliance cases and why are you still receiving over 550 of them a year:

Answer: Non-compliance cases are those that do not arise from the DOE's petroleum price and allocation regulations that were in effect from August 1973 through January 1981. These are the cases that will remain once OHA's compliance and refund work is concluded. They include (i) appeals from denials issued by other DOE offices of Freedom of Information or Privacy Act requests, (ii) requests for exceptions (waivers) from DOE regulations or the requirement to file EIA forms, (iii) requests for hearings concerning denials or suspensions of security clearances, (iv) appeals of hearing officer determinations in security clearance cases, (v) requests for hearing in connection with alleged reprisals against contractor employees who made whistleblower complaints, and (vi) various types of miscellaneous cases. The number of cases we receive depends to a large extent upon the activities of various program offices. Our estimate of 550 cases per year is based primarily upon past experience, as it is very difficult to anticipate what the program offices might do.

Question: How much longer will you be accepting refund applications?

Answer: We anticipate that we will be accepting refund applications for approximately two more years. This will depend upon how many more requests we receive to implement new Subpart V refund proceedings. Once we cease accepting refund applications, it may take a year or two to finish processing them.

Question: Who submits these applications and how do you determine their validity?

Answer: Refund applications are submitted by a wide variety of individuals, businesses and governmental entities who believe that they were overcharged in connection with their purchases of petroleum products during the period of price controls. Applicants have included farmers, small and large businesses, operators of retail service stations, hospitals, city and state governments, and school districts. To judge the validity of claims, OHA requires the applicant to submit some proof of the amount of their petroleum product purchases during the refund period. In addition, the applicant must generally show that it was injured, i.e., that it did not pass the overcharges through to its customers. However, the amount of evidence that an applicant must provide varies with the type of applicant and amount of refund sought. We presume that certain types of applicants are injured. For example, end-users (applicants that did not resell the products) are presumed to have been injured. There is also a presumption of injury for reseller applicants that are making a refund claim of less than either $5,000 or $10,000 depending upon the particular refund proceeding.

Question: What portion of these applications are denied?

Answer: Less than three percent of refund claims are denied. Claims are generally denied because the applicant is ineligible for a refund or has failed to submit enough evidence to prove its claim. In addition, approximately eight percent of applications are dismissed. Claims are dismissed generally when the applicant decides not to pursue its claim or fails to respond to our requests for additional information. In addition, our analysis often results in refunds that are larger or smaller than the applicant claimed.

Security Clearance Appeals

Question: To what extent are you reviewing appeals of decisions to revoke security clearances?

Answer: The DOE has established procedures that govern the resolution of questions concerning the eligibility of individuals for access to classified matter or special nuclear material. Consistent with Executive Orders and court precedents, these procedures provide an opportunity for hearing and separate administrative review in cases when it is determined that questions concerning an individual's eligibility for access authorization cannot be favorably resolved by interview or other action.

Question: How big is the workload?

Answer: During fiscal year 1994, while the hearing function was still being handled by contract hearing officers, 190 hearings were held concerning the denial or revocation of security clearances. So far in fiscal year 1995, we have received 26 requests for hearings and administrative review. It is unclear to us why these cases have been coming in at a rate lower than in fiscal year 1994.

Question: With the emphasis on government downsizing, why was this function moved from being handled under contract to being handled by in-house staff?

Answer: The Office of Management and Budget and the General Accounting Office advised the Secretary of Energy that the hearing and review functions of security clearances are inherently governmental functions that should not be contracted out. Noting the quasi-judicial nature of hearing and review functions under this subpart, they referred the Secretary to OMB Circular No. A-76, ¶ 6e, which specifically includes "judicial functions" as an example of an act of governing that should not be contracted out. It is for this reason that the Department agreed to federalize these functions. In addition, we expect that bringing the function in-house will save substantially on the cost of processing these matters.

Overcharge Funds

Question: What amount of money is in the Oil Overcharge Escrow Account?

Answer: As of January 31, 1995, there was $991,114,026 in the DOE's Deposit Fund Escrow Account.

Question: How do you decide when to distribute these funds?

Answer: These funds involve various situations. The escrow account can be broken down in the following manner:

Money available to fund refund claims:	$576,412,677
Money reserved for existing litigation risks:	174,794,174
Money involved in the Citronelle litigation:	137,307,133
Money involving Consumers Power litigation:	12,903,594
Funds that will be distributed to States:	18,308,498
Pre-refund stage funds:	71,387,950
Total:	$991,114,026

In the next several months, we anticipate making a third payment to successful claimants in the crude oil refund proceeding that will total over $270 million. The remainder of the $576 million available to fund refund claims will be distributed to individual applicants once we have determined that their claims are meritorious. If we find that funds are not required for refund claims, they will be declared excess and made available for distribution to the States. Funds that will be distributed to the States are awaiting State action. We recently sent letters to all State Energy Offices reminding them of the funds that remain.

Question: How much was paid out of the fund in fiscal year 1994 and what was the distribution of these funds?

Answer: In fiscal year 1994 we paid out $55,633,608 from the Deposit Fund Escrow Account. These funds were distributed in the following manner:

Funds distributed to claimants:	$25,529,332
Funds deposited into the Federal Treasury:	633,496
Funds distributed to the States:	11,939,005
Excess funds under PODRA legislation:	17,531,775

Question: Who determines when funds should be declared as "excess" and what criteria are used to make that determination?

Answer: The Petroleum Overcharge Distribution and Restitution Act of 1986 (PODRA) requires the Secretary of Energy to determine annually the amount of oil overcharge funds that will not be required for restitution to injured parties in refund proceedings and to make that excess available to state governments for use in four energy conservation programs. This determination must be published in the *Federal Register* within 45 days after the beginning of each fiscal year. The Secretary has delegated this responsibility to the OHA Director.

To arrive at the amount that is "excess," the OHA reviews all accounts in which monies covered by PODRA are deposited. PODRA generally covers all funds now in DOE escrow which are derived from alleged violations of the Emergency Petroleum Allocation Act of 1973 or the Economic Stabilization Act of 1970. Excluded are funds which (1) have been identified for indirect restitution in orders issued prior to enactment of PODRA; (2) have been identified for direct restitution in a judicial or administrative order; or (3) are attributable to alleged violations of regulations governing the pricing of crude oil and subject to the settlement agreement in *In Re The Department of Energy Stripper Well Exemption Litigation,* M.D.L. No. 378 (D. Kan., July 7, 1986).

In proceedings in which refund claims are pending, OHA on a claim-by-claim basis examines pending claims and establishes reserves sufficient to pay the entire amount of those claims. The reserves also include all refunds ordered by the OHA since the end of the last fiscal year but not yet paid. For proceedings in which all claims have been considered or in which no claims have been filed, and the deadline for filing claims has passed, all funds remaining are excess. Small amounts of interest accrued, until transfer, on funds in accounts that were closed (with a zero balance) in the previous fiscal are included as part of the "excess" for the fiscal year.

Question: What restrictions are placed on the States with respect to how oil overcharge funds can be used?

Answer: Almost all of the oil overcharge funds the States received are governed by the settlement agreement that was reached in court litigation referred to as the Stripper Well Exemption Litigation. In the settlement agreement, the DOE and the States agreed that the States would use oil overcharge funds in one of three manners. First, States may use the funds in any of the DOE energy efficiency programs or in the Low Income Home Energy Assistance Program operated by the Department of Health and Human Services. Second, States may use the funds in any of the categorical uses allowed by a previous consent order entered between DOE and Chevron, Inc. Third, the States may use the funds for any program approved by the Office of Hearings and Appeals. Finally, States are required to report their expenditures of these funds annually to the DOE and the Court.

Freedom of Information and Other Activities

Question: What percent of your time is devoted to processing appeals of information denial pursuant to the Freedom of Information Act?

Answer: We estimate that somewhat less than one-tenth of our time is spent on Freedom of Information Act or Privacy Act appeals.

Question: What other types of activities are performed by your office and what is the relative amount of time spent on each?

Answer: We decide requests for exceptions from DOE regulations or Energy Information Administration reporting requirements, decide appeals of whistleblower cases, and hear a number of other types of miscellaneous cases including appeals regarding Payments Equal to Taxes determinations under the Nuclear Waste Policy Act of 1982, and appeals from special assessments of nuclear utilities for decontamination and decommissioning of uranium and thorium sites. We also expect to hear appeals involving the Alternative Fuels Fleet Program. The number of cases in each of these categories varies from year to year, and some types of cases require much more effort to process than do others. We estimate that between one-quarter and one-third of our time will be spent on these types of proceedings.

Outyear Budgets

Question: At some point over the next couple of years do you see your annual budget requests and staffing requirements decreasing? Please explain.

Answer: Yes; as we complete processing the refund and other compliance cases, we expect our budget and staff requirements to decrease significantly. We expect to require a budget between $3.6 and $4.0 million and between 42 and 48 FTE's once we conclude all of our compliance cases in fiscal year 1997 or 1998. We have little experience in the resources that are necessary to process several relatively new areas of responsibility, including whistleblower and security clearance cases, and this projection may have to be adjusted upward or downward as we gain experience in these cases. Moreover, additional resources will be needed if OHA is given added responsibilities.

Question: Why is there a need to keep your organization separate from the Office of General Counsel?

Answer: It is important that there be a separation between the advisory and adjudicative functions of the DOE. The Office of General Counsel advises other DOE offices on legal matters. It would be inappropriate for the Office of General Counsel to both advise other offices and also be the office that decides any appeals that arise from that advice. Moreover, in some proceedings, the program offices are represented before the Office of Hearings and Appeals by the staff of the Office of General Counsel. It is for reasons like these that an independent office to perform adjudications within DOE was created.

Question: If the Committee were to recommend consolidating your functions with other DOE entities, where would those functions most logically fit. Please provide details for the record.

Answer: In our view, the interests of the DOE and the public would best be served by maintaining an independent and unbiased organization to perform adjudications. The functions of two new and relatively untested DOE offices, the Office of Alternative Dispute Resolution and the DOE Ombudsman could be merged into and performed by the OHA with little, if any, additional expenditure. In addition, adjudicatory functions that are currently being performed by other DOE offices, such as the Office of Personnel and the Office of Economic Impact and Diversity, might be consolidated into a single dispute resolution office.

Administrative Support

Question: To what extent are you required to pay the Department for centralized administrative support services? What do you pay for?

Answer: We are required to pay the Department through the Office of Human Resources and Administration for all operating support services, such as facilities, equipment, space, printing, and office automation. Such costs are broken down into direct and indirect services. Allocation of indirect services, such as space and facilities, is based upon percent of population. Office automation, reports, printing, court reporting services, and the like are direct costs which are based upon actual expenditures.

Question: How much did you pay the Department for these services in fiscal year 1994 and how does that compare with fiscal years 1995 and 1996.

Answer: In fiscal year 1994, we paid the Department $1,464,000. This was adjusted upward from the Department's original request because of increased office automation. Currently, the request for administrative support services from the Office of Human Resources and Administration is $1,337,000. This figure could be increased if we have increased needs for court reporting services, and the like.

Questions Submitted By Congressman Sidney Yates

Changing Work of the Office of Hearings and Appeals

Question: I understand your role is changing so that you are now doing things such as security clearances. Can you please tell us how much of a workload this is for you?

Answer: Effective with new cases commencing on August 8, 1994, OHA was delegated the responsibility for conducting hearings concerning the eligibility of individuals for security clearances in cases where that question cannot be favorably resolved by interviews or other action. Previously, this function was performed by contract hearing officers. The number of security clearance cases can vary widely from year to year. During fiscal year 1994, contract hearing officers held 190 hearings. However, OHA has only received 26 requests for hearings so far this fiscal year. We expect that this function will require substantial time and resources. In most cases, the hearing officer must travel to the field to conduct the hearing. This usually requires between two and three days, including travel time. The hearing officer must then examine in detail the hearing transcript and other documentary evidence in the record and prepare a written opinion. Either the individual concerned or the Office of Security Affairs may appeal the hearing officer's opinion. OHA will hear such appeals, but they will be considered by a different division of the office from that of the hearing officer.

Question: What portion of the security clearance requests are in support of programs funded through the Interior and Related Agencies appropriation?

Answer: A security clearance is needed by a person who comes in contact with classified information or special nuclear material. While we have not made an inventory of programs funded through the Interior and Related Agencies appropriation, we believe that the portion is small.

Question: What other new tasks are you being asked to perform?

Answer: Recently, several program offices have asked the Office of Hearings and Appeals to process administrative appeals for them. For example, the OHA handles appeals regarding Payments Equal to Taxes determinations under the Nuclear Waste Policy Act of 1982, as amended. We are also handling appeals from special assessments of nuclear utilities for decontamination and decommissioning of uranium and thorium sites in the United States. Recently issued proposed rules provide for administrative appeals to the Office of Hearings and Appeals in the Alternative Fuels Fleet Program. Finally, we have recently issued new general procedural rules that will allow DOE offices to incorporate administrative appeals and requests for exception relief into all program areas. A number of other program officials have contacted us recently to explore the possibility of including an administrative appeal process in their programs.

Question: Why should these functions continue to receive its appropriation from this subcommittee?

Answer: A very large portion of our work continues to support programs funded through the Interior and Related Agencies appropriation. This will certainly be true for fiscal year 1996. While a number of new areas of jurisdiction support programs funded through other committees, we believe that a large portion of our workload will continue to support programs funded through the Interior and Related Agencies appropriation for at least the next several years. Nevertheless, when the workload associated with oil overcharge work begins to decline, the percentage of our total workload associated with programs funded through the Interior and Related Agencies appropriation will also decline. We do not foresee the start of such a decline for several years. We believe that all the functions of the Office of Hearings and Appeals (other than those of the Board of Contract Appeals) should continue to receive their appropriations through a single subcommittee. Because any particular individual within OHA can be working on a variety of types of cases simultaneously, it would be difficult to break down the office's budget by the various types of cases it hears.

TUESDAY, FEBRUARY 21, 1995.

FOSSIL ENERGY RESEARCH AND DEVELOPMENT, CLEAN COAL TECHNOLOGY, NAVAL PETROLEUM AND OIL SHALE RESERVES, STRATEGIC PETROLEUM RESERVES, AND FUELS PROGRAM

WITNESSES

PATRICIA FRY GODLEY, ASSISTANT SECRETARY FOR FOSSIL ENERGY, U.S. DEPARTMENT OF ENERGY

GEORGE RUDINS, DEPUTY ASSISTANT SECRETARY FOR COAL TECHNOLOGY,

MARVIN SINGER, DEPUTY ASSISTANT SECRETARY FOR ADVANCED RESEARCH/SPECIAL TECHNOLOGIES

REGINAL SPILLER, DEPUTY ASSISTANT SECRETARY FOR GAS AND PETROLEUM TECHNOLOGIES

CAPTAIN ERNEST HUNTER, DEPUTY ASSISTANT SECRETARY FOR NAVAL PETROLEUM AND OIL SHALE RESERVES

RICHARD FURIGA, DEPUTY ASSISTANT SECRETARY FOR STRATEGIC PETROLEUM RESERVES

CHARLES ROY, FINANCIAL SYSTEMS OFFICER

Mr. REGULA. We will start the hearing this morning on the Fossil Energy R&D, budget.

We are pleased to welcome Assistant Secretary Pat Godley as the principal witness, and the supporting witnesses who will testify on a number of subjects here. Your statement will be made a part of the record and you can summarize.

We will put the biographies in the record also, with your full statement. You can perhaps summarize the testimony. There are several items to cover, so we will go ahead and get started.

Madam Secretary, you are on.

[COMMITTEE NOTE.—The prepared statement of Ms. Godley and witness biographies follows:]

Statement of
Patricia Fry Godley
Assistant Secretary for Fossil Energy
U.S. Department of Energy
to the
Subcommittee on Interior and Related Agencies
House Committee on Appropriations
February 21, 1995

Mr. Chairman and Members of the Subcommittee:

The FY 1996 budget for the Department of Energy's fossil energy programs reflects the vital role that energy, and particularly energy from hydrocarbons, plays in the economic health of the United States and its workforce.

The United States obtains 85% of its energy from coal, petroleum and natural gas, and will continue to do so well into the 21st century. For a nation determined to sustain economic growth, to create new jobs for its citizens, and to preserve and enhance the quality of life, fossil fuels will remain an indisputable and dominant part of the energy equation for our lifetime and the lifetimes of several future generations.

Our budget request has been fashioned from three very important premises that go to the core of the Department's Strategic Plan, *"Fueling a Competitive Economy":*

(1) The economic security of the United States depends upon full development of domestic energy resources that are secure, reliable and affordable.

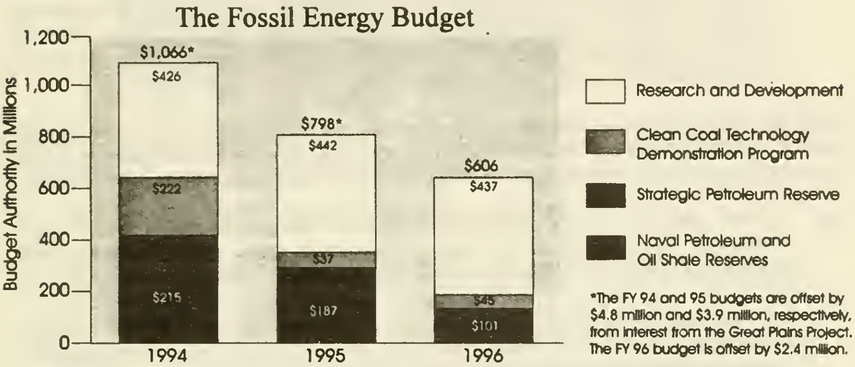
(2) The United States will not be able to produce and use hydrocarbon fuels to their full potential – efficiently, affordably, and with environmental responsibility – unless new technology is developed and deployed.

(3) Failure to build on the substantial technological capabilities we already possess will put the U.S. at a competitive disadvantage to other countries who are pushing hard to dominate an increasingly "high-tech" global energy market.

As Secretary O'Leary said in her January 19, 1995, testimony before this Subcommittee, *"The national security danger in this decade and the 21st century is far more than bombs and weapons. It has to do with economic viability and economic dominance. I don't want us to lose that battle."*

My testimony will discuss how our budget proposal addresses these strategic goals in the three areas of responsibility of the Office of Fossil Energy: (1) development of technology in the production and use of fossil fuels, (2) management of the Strategic Petroleum Reserve, and (3) management of the Naval Petroleum and Oil Shale Reserves.

The FY 1996 request for new appropriations for these programs is $606 million, a 24% reduction from the FY 1995 appropriations, as shown by the following chart:



The Fossil Energy Budget

*The FY 94 and 95 budgets are offset by $4.8 million and $3.9 million, respectively, from interest from the Great Plains Project. The FY 96 budget is offset by $2.4 million.

We Are Focusing on Priorities and Cutting Costs

President Clinton has pledged to deliver to the American people a leaner Federal Government that works better and costs less. Our FY 1996 budget request – and the out-year funding associated with it – demonstrates that the Office of Fossil Energy takes that commitment very seriously. We are making the tough decisions that will lead to significant cost savings that will make the President's initiatives possible:

(1) **Return Unused Clean Coal Technology Funding** - In FY 1996, we have requested only enough funding to meet our estimated project commitments for that year. While we continue our commitment to ongoing projects, we will request no new starts. If any project is cancelled, the project's funding will either be used to meet the needs of remaining projects, or will be rescinded if not needed by the program.

(2) **Sell a Small Portion of Strategic Reserve Oil** - We will offer to the market a small amount of Strategic Petroleum Reserve crude oil – equivalent to less than a single day of imports – to offset the unexpected costs of having to move oil from a geologically-unsound site and to ensure the future readiness of this important, national "insurance policy".

(3) **Corporatize, Then Divest of the Naval Reserves** - In FY 1997, we propose to privatize the Naval Petroleum and Oil Shale Reserves, which is now a purely commercial operation performing non-Federal functions. Meanwhile, we propose to manage these assets through a for-profit government-owned corporation, allowing the Reserves to be operated in a business-like manner that will maximize their value to the U.S. taxpayer.

(4) **Sharpen Focus of Coal R&D** - We propose to focus our research and development in the use of coal on advanced electric power technologies, realizing the benefits of more than a decade of government-industry cost-shared investments and making available a new generation of power systems in time for critical post-2000 market decisions. We will decrease or eliminate funding of technologies whose prospects for economic competitiveness are much farther into the future.

These are the highly visible examples of cost reductions and savings that are part of our budget request. Other examples are not so prominent, but they, too, reflect our commitment to reduce costs and to make the management of the Office of Fossil Energy more efficient. For example:

(6) In FY 1996, our Energy Technology Centers at Morgantown, West Virginia and Pittsburgh, Pennsylvania will cut the cost of support service contracts by one third compared to FY 1994, saving $12 million per year over FY 1994 expenditures.

(7) At the Strategic Petroleum Reserve, we have made operational improvements – ranging from more efficient use of electric power to the use of more cost-effective environment, safety and health compliance methods – that have saved $80 million in the last four years, and expect to save a total of $167 million through the year 2000.

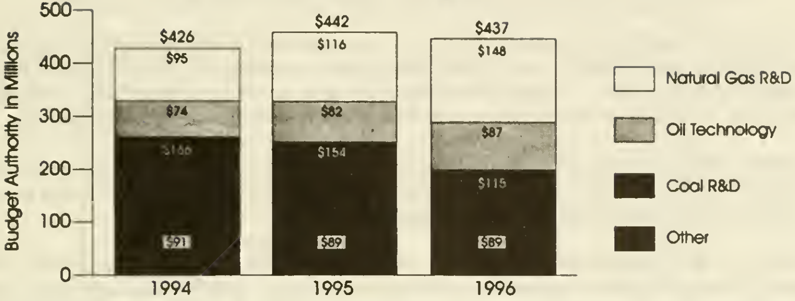
(8) We have worked to bring greater levels of industry cost-sharing into all of our R&D programs, and we have instituted more rigorous reviews in our Clean Coal Technology Program to reduce Federal funding for cost growth.

These changes and others will create a leaner program, as we focus our budget squarely on the challenges most critical to the energy future of this country.

THE FY 1996 FOSSIL ENERGY R&D PROGRAM

Within the overall Fossil Energy program, our FY 1996 budget request for research and development is $437 million. The proposed budget retains a commitment to technology advancement, in most cases highly leveraged by joint funding with the private sector. At the same time, our FY 1996 budget distributes funding in a way that brings a better balance to our R&D portfolio by increasing the relative proportion of funding for natural gas R&D. The distribution of funding is shown by the following chart:

The Fossil Energy R&D Budget



The programs in this budget respond to the two primary energy challenges that, if left unresolved, will adversely affect every resident of this country:

(1) ***Our growing dependence on other countries for liquid fuels.***

Last year, U.S. oil imports hit a record level, supplying more than half our domestic consumption. More than $50 billion flows out of this country annually to pay for foreign oil -- up from $35 billion in 1986. If these dollars were to be invested in the U.S., they would translate into the equivalent of more than 450,000 U.S. jobs, $24 billion per year in direct and indirect wages, and more than $21 billion per year in royalties, taxes and other payments to the Federal Government and States.

Moreover, we are prematurely abandoning domestic oil fields at an alarmingly high rate – resulting in the permanent loss of billions of barrels of oil in the U.S. that could lead to even greater dependence on foreign sources in the future.

(2) ***The need for cleaner, more efficient, affordable electric power generation.***

The economic slowdown in the 1980s reduced the need for new electric power plants. Few large plants are being built today. With the economy growing again, the U.S. will require new electric power generating capacity early in the next century. The next generation of power plants, however, will have to meet new environmental standards while still producing affordable electricity. Traditional technology cannot meet the more stringent standards and keep energy costs down and the economy growing.

Given that Americans spend $200 billion a year today on electricity, new technology that can meet tighter standards while keeping electric power costs at or below today's levels is essential to the continued health of our economy.

Our budget request responds to these challenges through partnerships with industry.

Government-Industry Cooperation – The Basis of Our R&D Program

The pace of technology development is critical. We can keep our domestic economy growing and stay ahead of our international competitors, only if new technology is ready in time to meet critical market "windows." We don't believe that will happen unless the Federal Government and the private and academic sectors join in concerted, forward-looking, risk-shared partnerships.

In today's highly competitive international marketplace, other countries have created their own public-private R&D ventures in an effort to gain significant global advantages in developing and marketing energy technologies for the 21st century.

In the U.S., the Federal Government is often the only significant investor who can assume the risk of a longer-term investment – where returns may be as many as 20 years into the future, the time it takes for a new technology to move from idea to reality. Government can provide the critical catalyst that stimulates the private sector to look beyond immediate financial benefits and invest in higher-risk technologies that can maintain our Nation's competitive edge. Industry participation also assures that the technology in which the Government invests has a real benefit in the market.

Our programs are cooperative partnerships with industry and other investors. They continue only if our partners maintain their support, generally through increasing levels of cost-sharing. Almost every dollar in our FY 1996 R&D budget will leverage private dollars:

- **Demonstrations - 60% cost-shared.** Our larger demonstration efforts, for example, the Clean Coal Technology Program and the Oil Recovery Field Demonstration Program, attract around 60% industry cost-sharing.

- **Engineering development - 20-50% cost-shared.** Engineering efforts, such as programs to develop fuel cells, advanced turbines, new coal-based power systems, and new gas and oil exploration and production technologies, have cost-sharing ranging from 20% to more than 50%.

- **Fundamental Research - up to 25% cost-shared.** Much of our more fundamental research, even when the payoff is well into the future, still receives almost a quarter of its funding from private and academic sponsors.

As the following discussion illustrates, these government-industry partnerships provide the foundation of our budget in natural gas, oil, and coal research and development.

The Natural Gas R&D Budget

The FY 1996 request for natural gas R&D is $145 million, a 25% increase over last year's appropriation. Natural gas R&D is the largest funding category in the R&D program:

Budget Authority in Millions

Natural Gas Research and Development	FY 1995 Appropriations	FY 1996 Request
Fuel Cells	$49.58	$55.46
Natural Gas Research		
- Resource and Extraction	$20.70	$33.00
- Delivery and Storage	1.07	3.07
- Advanced Turbine Systems	37.67	43.97
- Utilization	4.26	4.93
- Environmental Research/ Regulatory Impact Analysis	2.99	5.41
Total Natural Gas R&D	**$116.27**	**$145.84**

Natural gas is a rapidly resurging domestic energy option. The prevailing opinion of the 1970s that gas was a scarce resource has been replaced with a much better understanding of the tremendous domestic supply that actually exists. The National Petroleum Council, in the most extensive study to date, has concluded that nearly 1,300 trillion cubic feet of natural gas is technically recoverable in the lower-48 States. Far from being "scarce," this resource base represents a 60-year supply, with the likelihood that even more will be found as technology improves. The challenge is to turn this huge resource base into proven reserves.

Three major problems exist, however, that limit our realizing the full potential of natural gas in the U.S.:

(1) Much of the gas is beneath offshore waters that are currently off-limits to producers because of Congressionally-imposed moratoria.

(2) While natural gas is gaining acceptance in markets such as the electric power sector, improved technology is needed to make gas an even more attractive fuel, particularly in urban areas where environmental concerns are greatest.

(3) Some potential customers, again largely in markets such as power generation, still lack confidence in the supply and availability of natural gas.

The Fossil Energy R&D program focuses specifically on these latter two obstacles where new technology can play the most important role.

We have assigned a high priority to advanced natural gas technologies because they address both our liquids and electric power needs. For example:

- **Oil Substitution** - By developing better ways to extract natural gas from a greater diversity of geologic formations, we can help enhance consumer confidence that sufficient reserves will be available for both traditional markets and new applications, such as transportation where substituting natural gas for petroleum can reduce oil imports.

- **Electric Power** - By developing improved ways to use natural gas for power generation, we can offer new options for meeting future growth in electric power demand, especially for intermediate and peaking requirements.

Specific elements of the Natural Gas R&D program include fuel cells, advanced gas turbines, and supply R&D:

Fuel Cells

(FY95- $49.6m, FY96 - $55.5m)

Taxpayer Benefits: A new, ultra-clean method for generating electricity that can be sited in urban or remote areas, close to the power consumer. First-generation systems are deploying today; more advanced concepts will emerge from our program in 1998.

Because of the Federal investment in the 1980s and early 1990s, first-generation fuel cells are now crossing the commercial threshold. Relying on electrochemistry instead of combustion, the fuel cell is attractive for both heavily polluted urban areas and remote applications. Not only will it emit none of the smog-causing pollutants associated with conventional power plants, it is ideal as a distributed power source; that is, it can be sited close to the electricity user – for example, at electrical substations, or at shopping centers or apartment complexes, or in remote villages – minimizing long-distance transmission lines.

The fuel cells program is comprised of four initiatives:

- **Energy Partnerships for a Strong Economy** (FY95 - $0, FY96 - $8.0 million). This is part of a DOE-wide climate change action program to curb the growth of greenhouse gases. Last year, the Department proposed an initiative to accelerate market entry of commercially-ready fuel cells. Fuel cells are among the lowest emitters of greenhouse gases, and their widespread commercial use could help the Nation meet its greenhouse gas reduction commitments. However, while technologically proven, commercial fuel cells currently have a market price well above conventional technologies. The initiative proposed rebates for up to a third of the cost difference, creating an incentive for buyers to purchase fuel cells and for manufacturers to build mass production facilities that would lower costs. Congress added the funding to the Department of Defense appropriations and directed DOD to coordinate its activities with the Department of Energy. In FY 1996, we propose to continue this coordination and to complement the DOD market entry initiative with funding for accelerated demonstrations of advanced fuel cell systems.

Commercially-ready fuel cells are limited to relatively low temperature operations. Boosting operating temperatures can enhance power generating efficiency, provide even better environmental performance, and potentially lower costs. Higher temperature fuel cells, however, require different materials. The two most promising approaches are the *molten carbonate* and *solid oxide* technologies. Both are attracting substantial industry cost-sharing:

- **Molten Carbonate Systems** (FY95 - $30.0m, FY96 - $30.1m). Industrial sponsors – both vendors and customers – are providing an average of 34% cost-sharing to develop the molten carbonate fuel cell for commercial introduction by 1998. Two field test demonstration projects are attracting more than 50% cost-sharing. One is a 250-kilowatt cogeneration unit being installed at Miramar Naval Station in San Diego; the other is a 2,000-kilowatt power plant in Santa Clara, CA. In FY 1996, these pioneering units will be producing power. The FY 1996 budget proposal contains funding for testing these pioneering demonstration units and for a development effort to improve the technology and reduce costs.

- **Advanced Concepts** (FY95 - $18.1m; FY96 - $16.1m). The solid oxide fuel cell is an all-solid-state device that promises the highest operating temperature and efficiency of all concepts now in the Federal program. Its commercial potential is reflected in the fact that its development program is one of the highest cost-shared efforts in the Fossil Energy program, attracting nearly 51% of its funding from private sponsors. In FY 1996, the program will reach a major milestone when a 100-kilowatt test unit now being fabricated goes into operation. The unit is the basic building block of a commercial multi-megawatt plant.

- **Advanced Research** (FY95 - $1.46m; FY96 - $1.3m). This supporting research effort concentrates on solving generic problems, such as developing better techniques and materials for interconnecting solid oxide fuel cells, and exploring advanced fabrication techniques.

Advanced Gas Turbines

(FY95 - $37.7m; FY96 - $44.0m)

Taxpayer Benefits: Continued U.S. leadership in a huge world market by developing a "breakthrough" 21st century turbine system by the year 2000, offering higher efficiencies, and better environmental performance than any turbine marketed by U.S. competitors.

More than half of all new generating capacity to be added in the U.S. in the next 20 years will likely be gas-turbine-based. Much of the world is also looking to add gas turbine technology as economies expand. These two factors place the U.S. in a race for a global market that is likely to total hundreds of billions of dollars.

The United States currently commands 80% of the worldwide turbine market. But our manufacturers are facing growing competition from foreign vendors who are heavily subsidized by their respective governments.

To remain the world's leader, U.S. turbine vendors will have to offer a superior, yet affordable product. Current technology has essentially reached its limits. Conventional configurations and materials make it virtually impossible to boost operating temperatures and efficiencies further. These limitations give other nations the opportunity to trim the U.S.'s historical lead. The key to our future competitiveness will be a new type of advanced turbine.

The DOE program is attempting to "leapfrog" current technology – developing a turbine system with a different configuration and advanced materials that will not only be more efficient than current technology but also cleaner and lower cost. DOE and industry have jointly planned and are carrying out an 8-year program – 1992-2000. The program has enlisted more than 22 universities and the National Laboratories to assist in overcoming generic hurdles.

The Office of Fossil Energy is concentrating on utility-scale systems, while the Office of Energy Efficiency is co-funding a companion effort to develop industrial-scale systems. The FY 1996 program marks the mid-point of this program. After initial conceptual studies, the program is now concentrating on specific turbine components. In FY 1996, full-scale components and subsystems will be tested, leading to a turbine demonstration in the 1998-2000 timeframe.

Natural Gas Supply R&D

(FY95 - $29.0m; FY96 - $46.4m)

Taxpayer Benefits: Lower-cost and more effective approaches for locating and producing natural gas, ensuring that U.S. customers have confidence in gas supplies and that U.S. producers can take maximum advantage of a plentiful domestic resource.

Natural gas use in the U.S. is expanding, but recent gains are only a preview of what might be possible in the future. Gas is an ideal fuel for intermediate and peaking load electric power generation (the incremental levels of power supplied to meet high demands for electricity). Natural gas also can back out petroleum in the transportation market. The Gas Research Institute predicts that new and expanding markets could boost domestic demand for natural gas by more than 33% by 2010, from today's 21 trillion cubic feet per year to nearly 28 trillion cubic feet per year.

But without technological advances, the Nation's gas producers will not be able to keep up with demand. In fact, if current technology is not improved, our producers' ability to supply natural gas to customers will actually decline. As much as 12 trillion cubic feet of the gas that could be consumed in 2010 could be unavailable from U.S. sources without improved technology.

DOE's natural gas supply R&D program is targeting specific opportunities for technological improvement identified by industry. In virtually all these areas, the risks are too high or the payoffs too uncertain for industry to finance projects on their own. But industry has been willing to invest if the Government shares the risks. Overall, industry is now providing almost 48% of funding for R&D that can enhance the Nation's natural gas supply.

Activities include:

- **Resource and Extraction** (FY95- $20.7m; FY96- $33.0m). In future years, this program will be titled "Exploration and Production" to better reflect its make up. In this effort, the Department is co-funding the development of new drilling tools that can lower the cost of drilling for natural gas. Also, the program is working with universities and field operators to develop ways of locating naturally-occurring fractures in gas-bearing rock with greater accuracy, and to design fracturing technology that can create or enlarge fractures with greater precision and less damage to the reservoir.

  These technologies will be particularly important in extracting the extensive gas supplies that exist in the tightly-packed, harder-to-produce sand formations in the West. Resource characterization – understanding the nature and extent of natural gas formations – is also a key element of this activity. Efforts are underway to develop gas data systems, models and atlases that convert the "geological" picture of the Nation's gas resource into a more precise "engineering picture." Field studies will continue in the mid-continent region to quantify the potentially large amounts of "secondary gas" missed or bypassed by previous operations, and climate change-driven R&D will continue into coal bed methane recovery.

  Also, $14 million of funding in this category will be combined with funding from the Oil Technology program ($4 million) to support the second year of the *Advanced Computational Technology Initiative*, an industry-led program to apply the super-computing capabilities of the National Laboratories to assist the U.S. gas and oil industry.

- **Delivery and Storage** (FY95- $1.1m; FY96- $3.1m). A key to customer confidence is the timely and reliable assurance that natural gas is flowing into the Nation's delivery system or is readily available from storage. This confidence level suffers because States have inconsistent methods for gathering and reporting gas flow. Also, better equipment is needed for real-time measurement of the heat content and volume of gas flowing into a delivery system.

  DOE can play a coordinating role in working with States to develop consistent reporting guidelines. It can support the development of better gas flow measuring equipment. Also, by working with the gas industry to transfer better drilling and production technologies to extracting gas from storage reservoirs, the Department can enhance the confidence of the end-user that adequate gas will be available when needed.

- **Utilization** (FY95- $4.3m; FY96 - $4.9m). A third of the U.S.'s natural gas resource is too low in quality to permit its introduction into pipelines. It contains too much nitrogen, carbon dioxide, hydrogen sulfide or other impurities. Often, this gas is shut-in or abandoned because of the expense to upgrade it. Other gas supplies are too remote for economical pipeline transport – for example, gas in some regions of Alaska or in Gulf of Mexico fields. Converting this gas to transportable liquids is one way to produce marketable fuels. The FY 1996 budget continues research to develop lower-cost ways to remove impurities that contaminate low-quality gas and to convert remote gas supplies to liquids.

- **Environmental Research/Regulatory Impact Analysis** (FY95 - $3.0M; FY96 - $5.4m). As much as two-thirds of natural gas production is accompanied by the production of naturally occurring radioactive materials (NORM) which must be disposed of in a safe and efficient manner. In many areas, this is becoming more costly. Public misunderstanding can also lead to excessively burdensome requirements. This budget request will provide for one or more well-demonstrated, scientifically rigorous field-scale tests of safe and effective alternatives for NORM collection and disposal, with a focus on the Gulf Coast region. Other efforts will focus on assessing environmental risks in gas extraction and processing, working jointly with producers and State agencies.

The Oil Technology Budget

Taxpayer Benefits: A decrease in today's accelerating rate of domestic oil field abandonments and the potential to recover billions of barrels of crude oil that are currently beyond the reach of the independent producers (who are responsible for a growing percentage of U.S. oil production); also, more efficient and affordable technologies that can keep U.S. refineries in business.

Today, two major changes are occurring in the domestic industry: (1) major oil companies are moving to more lucrative prospects overseas, leaving aging domestic fields to much smaller, independent producers, and (2) low oil prices and lack of adequate technology are causing an unprecedented number of U.S. oil fields to be abandoned, even though substantial quantities of oil remain unproduced.

Oil field abandonment is a serious problem with permanent consequences. When an oil field is abandoned, its gathering system, pumping and piping, storage tanks and other surface facilities are removed. Often, leases expire or are voided by inactivity. When this occurs, it is likely that the field will never be reopened. Rebuilding surface facilities creates an enormous front-end capital burden – more than could be recouped if oil prices rose several times their current level. The oil that remains in the field, perhaps 50% to 70% of the original oil discovered, is essentially lost forever.

This situation is occurring in the United States. In 1980, only 20% of the remaining oil resource in the lower-48 States had been abandoned. Today, half has been abandoned. By 2020, 80% is likely to be permanently unavailable.

Although independent producers have made remarkable progress in cutting production costs, most lack the geological capabilities or access to technology to slow this alarming trend. One-third of independents have fewer than five employees. Two-thirds have 20 employees or less. These smaller companies, by themselves, can't afford the sophisticated geologic services that can tap the full potential of our domestic oil resource. Yet, they drill 85% of all domestic wells and produce 50% of all the crude oil recovered in the lower-48 states and 66% of the natural gas.

The Department's FY 1996 budget request focuses squarely on these problems:

Budget Authority in Millions

Oil Technology	**FY 1995 Appropriations**	**FY 1996 Request**
Reservoir Class Field Demonstrations	$33.91	$28.37
Exploration and Production Supporting Research	36.09	41.35
Exploration and Production Environmental Research	4.78	7.06
Processing Research and Downstream Operations	6.93	10.00
Total Oil Technology	**$81.71**	**$86.78**

o **Reservoir Class Field Demonstrations** (FY95- $33.9m; FY96- $28.4m). This program addresses the oil abandonment problem by providing cost-sharing to producers and others to demonstrate ways to prolong the life of the Nation's most endangered classes of reservoirs. A "producer-to-producer" technology transfer effort is required, so that operators in similar geologic situations learn about promising approaches for maintaining or boosting production.

Currently, 33 projects are in the program representing three different geologic classes of reservoirs. Total value is $290 million, with the private sector providing 57%. A fourth class of reservoirs will be targeted in FY 1995. The FY 1996 budget will continue funding for these projects and begin a new effort to apply better reservoir management techniques to prevent marginal wells from being shut-in.

- **Exploration and Production Supporting Research** (FY95- $36.1m; FY96- $41.3m). While the field demonstration program is "buying time," the supporting research program is co-sponsoring research into more advanced methods of producing oil. New technologies have the potential to produce greater proportions of the oil known to exist and to locate and produce crude oil that is currently undiscovered. Included in this program are better ways to use thermal and chemical processes to enhance recovery, including oil that may have been bypassed by conventional approaches. Also underway are new approaches for studying the characteristics of a reservoir, such as microseismic mapping and the use of nuclear magnetic resonance and cat-scan imaging, to determine how best to extract its remaining oil.

  Advanced drilling tools and techniques are also sponsored in this program. Technology transfer is a key element, with funding provided to apply National Laboratory-developed technology to the oil and gas industry and to disseminate information on promising technologies to independent producers. A portion of this funding (about $4.1 million) would be used to support the second year of the *Advanced Computational Technology Initiative*.

- **Exploration and Production Environmental Research** (FY95- $4.8m; FY96- $7.1m). Stringent environmental compliance requirements could reduce domestic oil production by as much as 500,000 barrels per day. To ensure that States, Federal regulatory authorities, and local agencies have sufficient data to adequately assess risks before imposing new regulatory requirements, DOE is carrying out an accelerated research and data gathering effort.

  Specific study areas include the effects of disposing of produced water and sand from oil recovery operations and the treatment and disposal of naturally-occurring radioactive materials. Also included is work with States, Tribes, and Federal agencies to streamline environmental regulations and simplify compliance requirements without compromising environmental protection.

- **Processing Research and Downstream Operations** (FY95- $6.9m; FY96- $10m). The 1990 Clean Air Act Amendments have placed a regulatory requirement on U.S. refineries that could total nearly $37 billion in compliance costs – $6 billion more than the entire net worth of the refineries themselves.

  More stringent regulations come at a time when the Nation is demanding higher-quality refined products (reformulated gasoline and oxygenated fuels) while the general quality of domestic crude oil is declining. In FY 1994, DOE began a downstream refining and processing research program. In FY 1996, this program will be expanded to assist the refining industry in developing lower-cost environmental compliance techniques, improving upgrading technology (for example, using bioprocessing to remove sulfur and metals from heavy oils), and developing new technologies that can prevent pollutants from forming rather than incurring the costs of cleanup.

The Coal R&D Budget

The United States relies on coal for more than 22% of its total energy consumption. Economic growth will increase production of U.S. coal by more than 21% by the year 2010. The predominant use of this coal will be for electric power generation.

Coal generates 53% of the nation's electricity, more than double the contribution of any other fuel source. More than 8 out of every 10 tons of coal mined in this country go to electric power plants. Coal will continue to be the primary source of electric power for well into the next century not only in this country but for much of the world. The United States has an extraordinary opportunity to market new, cleaner coal-based electric power systems overseas, creating new U.S. jobs and helping reduce the U.S. trade deficit.

Accordingly, R&D on future electric power systems is the highest priority of the three categories in the FY 1996 Coal R&D budget:

Budget Authority in Millions

Coal Research and Development	FY 1995 Appropriations	FY 1996 Request
Advanced Clean/Efficient Power Systems	$90.51	$73.38
Advanced Clean Fuels Research	$38.52	$16.57
Advanced Research and Technology Development	$25.36	$24.92
Total Coal R&D	**$154.39**	**$114.87**

Advanced Clean/Efficient Power Systems

(FY95 - $90.5m; FY96 - $73.4m)

Taxpayer Benefits: New electric power generating options that can reduce sulfur and nitrogen oxide pollutants by 10-fold over current technology without imposing higher costs on consumers; technologies that will allow the U.S. to keep using its most abundant and affordable energy resource for meeting additional power demands created by an expanding economy.

Within the Coal R&D program, we have assigned our highest priority to advanced technologies for electric power generation, decreasing other coal-related research efforts to ensure that we maintain the pace of electric power systems development. Industry, either through individual companies or the Electric Power Research Institute, provides an average of 28% in cost-sharing for the advanced electric power generation R&D projects.

The reason for the high priority is that additional electric generating capacity will be crucial for economic growth beginning early in the 21st century.

Today, few companies are building "baseload" power plants – the larger plants that make up the backbone of the Nation's power grid. But this situation will change in the coming decade. The current fleet of baseload plants is aging and will require replacement or repowering. Even with aggressive energy efficiency measures, economic expansion will create the need for new power plant construction – perhaps as much as 120,000 megawatts overall by 2010 with at least 30,000 megawatts likely to be coal-fired.

This approaching need for new power will be accompanied by new environmental standards that have fundamentally altered future planning for power technologies.

The 1990 Clean Air Act Amendments, for example, impose a nationwide, permanent sulfur emission cap due to take effect in the year 2000. This will create progressively more difficult challenges for power companies to add new generating capacity to meet future electricity demands.

Current environmental controls impose both a cost and efficiency penalty. Without new technology, it will be difficult for generating companies to respond to increased demand for electricity and environmental regulations without raising the cost of electricity. Given that $200 billion a year from our economy goes for the purchase of electricity, any economic penalty can erode U.S. competitiveness and ultimately limit economic growth.

Today, however, because of more than a decade of Government-industry research, we now have in sight a new family of technologies that can lead to a 10-fold reduction in a power plant's emissions while, at the same time, lowering the cost of electricity and raising efficiency.

With these new technologies, the Nation will be able to add significant amounts of new electricity generating capacity – sustaining economic growth – for well into the 21st century while staying under the Clean Air Act's emission cap. At the same time, electricity rates can be kept affordable.

Moreover, these new technologies will be more efficient than today's systems, producing electricity ultimately at 50-60% efficiencies, compared to the 33% efficiency levels common today. Higher efficiencies mean fewer carbon dioxide emissions, reducing concerns about the buildup of greenhouse gases and making these technologies valuable export commodities.

This new suite of advanced technologies includes:

- **Advanced Pulverized Coal-Fired Systems** (FY95 - $7.5m; FY96 - $5.0m). These "low emission boiler systems" combine the most attractive combustion and pollution control advances into a new, original design of a conventional pulverized coal-fired boiler. Because it closely resembles conventional hardware, the technology could gain early market acceptance. Three industry teams currently are designing different versions of the boiler system. DOE plans to reduce the number to one at the current private cost-sharing ratio, or to two if additional private cost-sharing can be attracted. Currently this effort is receiving 37% industry cost-sharing.

- **High Efficiency Pressurized Fluidized Bed** (FY95 - $25.2m; FY96 - $19.5m). Fluidized bed systems are the next step up in power plant efficiency. They burn coal in a way that permits pollutants to be reduced inside the boiler, eliminating the need for expensive scrubbers. Pressurizing the process produces high-energy gases that allow a gas turbine to be added (along with a conventional steam turbine), giving coal plants the same "combined cycle" efficiency advantages as natural gas- or oil-fired systems. In FY 1996, construction of the Nation's first "one-stop" test center for advanced coal power systems – the Wilsonville (AL) Power Systems Development Facility – will be completed with 20% cost-sharing from industry. A 2nd-generation pressurized fluidized bed system is slated for pilot testing at the facility beginning in FY 1996.

- **High Efficiency Integrated Gasification Combined Cycle** (FY95 - $27.5m; FY96 - $24.5m). This technology boosts power generating efficiency even more, while further lowering emissions. The coal combustor is replaced with a gasifier and highly-effective cleanup equipment is employed to remove impurities from the coal gas. In FY 1996, the Wilsonville Power Systems Development Facility (see above) will also be used to test a variety of "hot gas" particulate removal devices – advanced devices that can remove fine fly ash particles from the high temperature gas stream without major efficiency losses. DOE will also complete construction of a gasifier improvement facility in West Virginia that will test an innovative gasification technology designed specifically for 21st century electric power generation. Industry cost-sharing averages about 20%.

- **Indirectly Fired Cycles** (FY95 - $11.8m; FY96 - $11.9m). This technology offers a novel approach that combines a gas turbine with a coal combustor but prevents the hot, potentially damaging, combustion gases from contacting the turbine. Instead, the gases heat a "working fluid" that powers the turbine. This year, two contractors are continuing the initial phase of conceptual design and preliminary R&D, while a third is testing a ceramic heat exchanger. The next phase – engineering development – is scheduled to begin this summer and will be continued through FY 1996. Private sector cost-sharing is averaging about 32%.

- **Advanced Research and Environmental Technology** (FY95 - $18.5m; FY96 - $12.5m). Activities in this budget line are either critical to the success of many of the advanced power systems or offer specific sub-systems for future power plants. New approaches for super-clean emissions controls, such as electrochemical separation processes, are part of this effort. Work will also be funded in FY 1996 to evaluate the release of air toxics from advanced power plants, ensuring that the Environmental Protection Agency has sound data to set reasonable compliance requirements. Also, this effort includes research into recovering, reusing or disposing of carbon dioxide from coal-fired power plants and studies to determine the most effective ways of disposing of coal wastes.

Advanced Clean Fuels Research

(FY95-$38.5m; FY96-$16.6m)

Taxpayer Benefits: The future option for the Nation to make liquid fuels from coal if warranted for economic or national security.

The FY 1996 budget reduces the scope of the Federal program to develop lower-cost ways to produce liquids from coal. At the same time, it recognizes the strategic importance of keeping the technology base available for future use and, at the laboratory scale, maintaining the drive toward lower costs.

Since the early 1980s, the program has achieved substantial technological progress. New approaches have reduced the cost of making liquid fuels from coal from $60 per barrel to $35-$40 per barrel (all costs are based on full development and scale-up). Design and catalyst improvements offer the prospects of reaching, or perhaps breaking, the $30 per barrel mark. More recently, experiments have shown a new path perhaps leading to even lower costs. Mixing waste plastics into the coal feed provide a relatively cheap source of hydrogen. In previous processes, hydrogen has been relatively expensive, driving up the cost of the liquid product. Using waste plastics might offer dramatic price reductions, perhaps down to $20 per barrel, while helping to solve a major solid waste disposal problem. Included in this program are:

- **Direct Liquefaction** (FY95 - $9.8m; FY96 - $5.1m). Direct liquefaction processes convert coal directly into liquid fuels by adding hydrogen under heat and pressure. In FY 1996, industry-performed research on improved catalysts and advanced liquefaction technologies will be conducted to maintain a basic level of technological expertise.

- **Indirect Liquefaction** (FY95 - $12.6m; FY96 - $5.8m). Indirect liquefaction processes gases made from coal into various types of fuels, such as gasoline, diesel fuel, or oxygenates. The major reason for the budget reduction is the conclusion of testing at the LaPorte (TX) alternate fuels facility which, during the last decade, has produced a wealth of data on techniques for producing a wide variety of products. Work in FY 1996 will concentrate on smaller-scale research to develop better catalysts and to design better reaction vessels.

- **Coal Preparation** (FY95 - $7.2m; FY96 - $4.9m). Two major efforts will continue in FY 1996. One will investigate the potential of coal cleaning to remove air toxic-causing impurities. For some elements, particularly mercury and selenium, pre-combustion cleaning may be the only effective means for reducing these emissions. The second effort involves research on more advanced physical and chemical cleaning concepts, along with associated tests to determine the combustion characteristics of highly-cleaned fuels.

o **Advanced Research and Environmental Technology** (FY95 - $4.0m; FY96 - $0.7m). DOE will phase out its coal sample data base activities and its funding of the Consortium for Coal Liquefaction Science, and reduce its efforts in advanced liquefaction catalysts.

o **Systems for Coproducts** (FY95 - $5.0m; FY96 - $0). In past budgets, DOE had received funding to construct a process unit to test a "mild gasification" method of producing high-value liquids and solids, such as form coke and chemicals, from coal. The technology is a variation of concepts successfully demonstrated in the Clean Coal Technology Program and elsewhere. Therefore, this effort is not of sufficiently high priority to warrant further funding.

Advanced Research and Technology Development

(FY95-$25.4m; FY96-$24.9m)

Taxpayer Benefits: New ideas that could offer breakthroughs for future energy systems, advances in materials and equipment that could prove critical to the success of new technologies, and the education and training of tomorrow's scientists and engineers.

This program provides the "seed corn" of our Nation's future fossil energy industry. The program has produced important commercial successes -- for example, the Microcel™ coal cleaning technology is now a marketed technology. It has also revealed potential revolutionary scientific breakthroughs -- such as the application of "supercritical acids" to refinery and coal processing which earned a former Fossil Energy grant recipient the 1995 Nobel Prize in chemistry. Many projects have also served as training ground for college and university students who will be the country's next generation of scientists and engineers.

The Department is proposing a budget of $24.9 million for its Fossil Energy Advanced Research and Technology Program in FY 1996, a slight decrease from the $25.4 million enacted in FY 1995. The funding would be divided between two types of activities:

o **Crosscutting applied research** - A set of activities to develop the technology base for enabling science and technology that are critical to the future development of highly-advanced coal based power and fuel systems. These activities include: studies in coal utilization science ($3.1m) to increase our knowledge of the principal mechanisms that control coal combustion; high performance materials and components ($7.3m) to develop solutions to materials barriers that might otherwise limit improvements in advanced coal processes; instrumentation and diagnostics ($0.5m) to improve process controls for advanced coal plants; bioprocessing ($1.0m) to apply advances in biotechnology to clean and process coal; and university and Historically Black Colleges and Universities research ($7.0m) in which student-teacher teams work on advanced projects that span the full spectrum of fossil fuel use.

- **Crosscutting studies and assessments** - These efforts include international support ($1.3m) and coal technology export activities ($1.2m) to assist U.S. industry in opening new markets and ensure that the U.S. is benefitting from international cooperative activities; environmental activities ($2.5m) which analyze trends and issues in air and water quality, solid waste, toxic substances and global climate change; and technical and economic analyses ($1.0m) which support the Office of Fossil Energy's and DOE's strategic planning and response to requests from Congress for analytical studies.

Other R&D Funding Requirements

Program management - To manage the Fossil Energy R&D program, the FY 1996 budget requests $69.9 million for program direction and management support, a decrease from $72.3 million in FY 1995. The decrease is actually more prominent than these figures would indicate, however. Just over $7.7 million of the FY 1996 request provides funds for the management and operating contractor at the National Institute for Petroleum and Energy Research at Bartlesville, OK. Previously, funding had been provided in the Oil Technology Program.

Plant and capital equipment - The FY 1996 request of $4 million for plant and capital equipment will permit needed repairs and refurbishments of buildings at the Energy Technology Centers and the Bartlesville Project Office. Also included in this budget is funding to maintain computer networks between the Federal sites and to establish a worldwide connection via the Internet to provide external audiences and potential worldwide customers with information on Federal-industry-university programs.

Environmental restoration - The budget also proposes $18.9 million to clean up contamination at Federally-owned fossil energy sites and former sites of Federally-sponsored fossil energy research. This funding also addresses compliance deficiencies associated with Federal, State, and local environment, safety and health regulations at the Energy Technology Centers.

Cooperative research - DOE is proposing no additional funding in FY 1996 for cooperative research activities at the University of North Dakota Energy and Environmental Research Center and the Western Research Institute. These privately-owned centers have established excellent research capabilities and are partners in other Fossil Energy projects. Both will be encouraged to compete for future procurements in the same manner as other organizations.

Fuels Programs - The request of $2.7 million will allow continued statutorily-required reviews of natural gas imports and exports, exports of electricity, and the construction and operation of electric transmission lines that cross U.S. borders, along with other regulatory functions.

THE CLEAN COAL TECHNOLOGY PROGRAM

Taxpayer Benefits: Cleaner, more efficient technologies demonstrated in time for 2000-2010 utility decisions on the next fleet of power generation facilities; potential export commodities for a global power market that could approach $1 trillion in the early part of the 21st century.

The FY 1996 budget request continues our commitment to ongoing Clean Coal Technology projects that continue to have strong support from their industrial co-sponsors. Yet, it also recognizes the likelihood that some projects may not continue. The current funding profile is:

Dollars in Millions

Clean Coal Technology Program	FY 1995 & Prior	FY 1996 Request	FY 1997 Estimate	FY 1998 Estimate
Current Law	$2,260	$200	$288	
New Funding Profile	2,260	45	115	27

The Clean Coal Technology Program has always been envisioned as a limited-duration initiative, rather than an ongoing technology development effort. From its five rounds of industry competition, the program has produced 45 projects. Of these, 6 have been completed to date. By the end of FY 1996, 24 will have completed their co-funded operations.

For every $1 invested by the Federal Government, private companies and States have contributed $2, making the program one of the most successfully leveraged technology-development ventures in the U.S. Government.

The program has produced significant results to date, and the benefits will escalate as the final projects enter their critical testing stages. Within the last year – the first in which a large number of projects have generated commercially-useful data – commercial sales have exceeded half a billion dollars, supporting more than 3400 jobs. In the U.S. and worldwide, more than $9 billion of commercial ventures have benefitted in some manner from the Clean Coal Technology Program and its associated research efforts.

Given the tight Federal budget requirements, the FY 1996 budget requests only enough funding to meet contract commitments accruing in that year. The program establishes specific decision points in all Clean Coal Technology projects and specifies critical performance requirements that must be met by the industrial co-sponsor. Over the coming months, several projects will reach these decision points. DOE, along with its private sector partners, will critically examine the merits of each project and whether the original purpose and financial commitment continues to exist. Given the high-risk nature of these projects, some will likely terminate. If any project is cancelled, the project's funding will either be used to meet the needs of remaining projects, or will be rescinded if the funds are not needed by the program.

THE STRATEGIC PETROLEUM RESERVE PROGRAM

Taxpayer Benefits: An emergency supply of crude oil that can protect against economic disruptions caused by oil cutoffs or shortages; a powerful deterrent to countries that might use oil as a political weapon.

The Office of Fossil Energy maintains the Nation's emergency oil stockpile – the Strategic Petroleum Reserve. Since the early 1980s, the existence of the Reserve has deterred hostile oil supply interruptions. The commitment of the U.S. to use the Reserve was a key element of the coordinated allied response to the 1991 Persian Gulf war. Combined with the overwhelming military action, announcement of a drawdown brought prices to pre-war levels.

Recently, questions have been raised about the need for a strategic reserve. While the development of additional oil reserves outside the Persian Gulf region has led to greater diversity in suppliers of oil to the U.S., maintaining the Strategic Petroleum Reserve inventory remains critical to ensuring our energy security.

There is still potential for supply disruptions to the world market caused by wars, political and religious unrest, natural disasters and failure in transportation logistics. Also, U.S. oil imports are projected to rise from nearly 50% today to about 60% by early next century; the world's oil reserves are becoming increasingly concentrated in the highly volatile Persian Gulf region; and U.S. leadership in stockpiling is critical to the accumulation of stocks in other International Energy Agency member countries.

The Strategic Petroleum Reserve is our national insurance policy. It is an asset, however, that is aging and particularly for the next 4-5 years, it will require a concentrated effort to refurbish its infrastructure and ensure its readiness for at least the next quarter century. Our priorities are to rectify the high gas content that has accumulated over time in some of the oil, to continue the decommissioning of the Weeks Island site, and to extend the life of or replace critical facilities to ensure readiness through 2025. The request for new budget authority is:

Budget Authority in Millions

Strategic Petroleum Reserve	**FY 1995 Appropriations**	**FY 1996 Request**
Storage Facilities Development, Operations and Decommissioning	$226.94	$293.86
Management	16.78	18.83
SPR Petroleum Account	-107.76	-187.00
SPR Receipts Account	-	-100.00
Total - SPR	**$135.95**	**$25.69**

The FY 1996 facilities operations and management program is proposed to be financed by the transfer of $187.0 million from prior year balances in the SPR Petroleum Account, use of $100.0 million from the sale of crude oil associated with the Weeks Island decommissioning, and new budget authority of $25.7 million for a total of $312.7 million. The continuation of fixed terminalling costs to maintain capability to resume crude oil fill or refill operations will be funded from prior year balances in the SPR Petroleum Account for a total of $5 million.

An SPR Decommissioning Fund will be established to finance the removal of crude oil and decommissioning of the Weeks Island site (see below) and other Reserve activities during FY 1996. The proposal provides for the sale of up to seven million barrels of oil associated with the Weeks Island decommissioning.

o **Oil Stabilization** - Long-term storage of crude oil in some of the Reserve sites has resulted in the accumulation of a higher-than-normal gas content, apparently from years of intrusion of methane from surrounding salt. Also, natural geothermal heating has raised the temperature of some of the oil. Both problems could increase air emissions as oil is withdrawn from the caverns. Degasification of the oil is scheduled to begin in July 1995 and be completed in April 1998, and requires continued funding in FY 1996. Installation of heat exchangers to cool the oil during drawdown operations is essentially complete.

o **Weeks Island** - A naturally-occurring fracture (or fractures) conveying water from a near-surface aquifer to the converted salt-mine storage chambers has compromised the geologic integrity of the Weeks Island facility in Louisiana, and created a significant risk of environmental damage and potential oil loss. The Department plans to transfer the Weeks Island oil to other Strategic Petroleum Reserve storage facilities in Louisiana and Texas during 1995 and 1996, and to decommission the site during 1997 and 1998. In FY 1996, decommissioning activities will be funded from the SPR Decommissioning Fund financed by the sale of $100 million of crude oil.

o **Life Extension Program** - The Life Extension Program will ensure that by the year 2000, all major systems will have been upgraded or replaced to extend the useful life of the Reserve's facilities and drawdown systems to the year 2025. FY 1996 projects include replacement of pumps, piping, valves, controls, brine ponds and various items of equipment necessary to maintain the readiness of the Reserve.

o **Commercial Use of Facilities** - In 1994, DOE initiated a project to permit commercial use of the Reserve's oil distribution facilities and pipelines that are underutilized due to suspension of oil fill. DOE has invited industry to submit offers to lease the St. James marine terminal. A solicitation for offers to lease the two Federally-owned crude oil pipelines in the Capline system will be issued in mid-1995. By making these facilities available for commercial use, the Department expects to: (1) reduce the operational cost of the Reserve, (2) generate revenue from the Government's investment, and (3) support industry in meeting the Nation's needs for crude oil distribution.

o **Petroleum Inventory** - The Reserve's inventory is currently 592 million barrels, and fill remains suspended in FY 1995 and FY 1996.

THE NAVAL PETROLEUM AND OIL SHALE RESERVES

Taxpayer Benefits: A valuable asset that no longer performs a Federal function; management as a for-profit government corporation and privatization can provide a significant portion of the budget offsets needed to support deficit reduction and tax cuts.

It is time to rethink the Federal role in operating the Naval Petroleum and Oil Shale Reserves.

The Reserves were established in the early 1900s to ensure a secure source of crude oil for the Navy as it converted its coal-powered fleet to oil. The Reserves no longer serve that purpose. Instead, they are operated today strictly as commercial ventures. One of the properties, the Elk Hills field in California, is the nation's 10th largest oil field and the largest natural gas producer in the State. This is a function the Federal Government should not be undertaking.

The Federal Government is managing and operating oil and gas reserves only because the Reserves were needed as a strategic asset at one time in our history. Moreover, the Government cannot operate the Reserves in accordance with prudent commercial standards because of bureaucratic requirements imposed on Federal operations. In addition, the three-year Federal appropriations cycle precludes the timely implementation of investment decisions necessary to maximize the value of the fields.

Accordingly, the Department is proposing a two-step process for the privatization of the Reserves. In the first step, we are proposing that Congress authorize management of the Reserves as a for-profit, Federally-owned government corporation, with the ability to maximize net revenues through commercial management and operating decisions.

The discretionary budget requirements of this corporation, if any, would depend upon the legislative authorities granted it and the timing of its creation. We expect to submit legislation in the near future that will further define the proposed operation of the corporation. It may be possible to develop an approach that, if implemented before or soon after the start of FY 1996, could lead to a significant reduction in the FY 1996 discretionary budget requirements.

In the second step of our proposal, the Department would seek to sell the Government's interest in the Naval Petroleum and Oil Shale Reserves in FY 1997. The Department seeks authority, in the FY 1996 budget proposal, to obtain a professional valuation of the Reserves and to conduct the necessary studies to ensure that the taxpayer receives a fair market value from the sale of the Reserves.

Because the interim corporatization step will be part of separate legislation to be forwarded to Congress, it is not assumed in the President's FY 1996 budget. The budget request assumes a "caretaker" status in maintaining operations at the Elk Hills Naval Petroleum Reserve #1 prior to an FY 1997 sale.

In a "caretaker" budget, capital investment for exploration and developmental drilling, facilities, and remedial well workovers would not be funded. Requested funds would be used first to meet safety and environmental requirements, operate on-line wells and facilities, and then, if funds are available, to conduct maintenance activities.

This budget is shown in the following chart:

Budget Authority in Millions

Naval Petroleum and Oil Shale Reserves	FY 1995 Approp.	FY 1996 Caretaker Request
Naval Petroleum Reserves	$177.07	$94.43
Naval Oil Shale Reserves	2.30	0
Program Direction	7.69	6.60
Total, NPOSR	**$187.06**	**$101.03**

Mr. Chairman, we are certain that management and operation of the Reserves under the status quo, as just another Government program without the flexibility to make and carry out sound business decisions, will far from maximize the value of the Reserves, and will be a disservice to the U.S. taxpayer.

We would, therefore, strongly request that the Congress support legislation to form a for-profit, Federally-owned government corporation by the end of FY 1995 to operate and manage the Reserves, to engage professionals to value the Reserves' assets to determine their potential market value, and to realize the maximum value of those assets through sale of the Government's interest in the Reserves in FY 1997.

CONCLUSION

The Office of Fossil Energy oversees a diverse group of activities. Most are inherently government functions, for example:

o Providing the leverage that industry needs to develop technologies that will meet the demand for the energy required to fuel our economy in the 21st century.

o Maintaining an emergency crude oil stockpile for national and economic security.

One, the operation of commercial oil and gas fields, is not.

In all of our activities, we are committed to ensuring that real and measurable benefits accrue to the citizens of the United States.

Speaking for all the employees of the Fossil Energy program, we are proud of our track record. From the development of more effective polycrystalline diamond drill bits to the introduction of fluidized bed combustors – which *Power* magazine called "the commercial success story of the last decade" in the power industry – our programs have made an impact. They continue to make an impact today. For example:

- One of our first Reservoir Class oil field projects (see page 12) has changed conventional thinking in the Green River oil fields of Utah. Already, increased production from several fields, due to the techniques demonstrated in our project, have produced enough new Federal royalties to pay for the entire Class I demonstration program;

- Our Advanced Gas Turbine program (see page 8) has already influenced commercial turbine design. A new commercial combustion turbine – introduced a few months ago as the world's largest, most efficient industrial turbine – uses technology for several key components derived from the DOE development program.

- We can trace the benefits of our Clean Coal Technology Program (see page 20) and its associated R&D to nearly $9 billion of power projects in the U.S. and overseas.

In FY 1996, if Congress approves the continued pace of our proposed R&D program, we will continue to produce tangible results, including:

- A new array of fracturing technologies, drill bits, and drilling systems that collectively could save gas producers at least $300 million a year by reducing equipment costs and reducing the number of dry holes;

- Two new advanced fuel cell demonstration units generating electricity in commercial settings in California, giving prospective customers "real-life" data for market decisions;

- More than 40 oil field demonstration projects showing producers – especially independents – ways to extend production from the Nation's most endangered reservoirs;

- Completion of six more Clean Coal Technology Projects, bringing the total to 24 and positioning the United States with the most extensive array of new environmental and energy products of any country now competing in the global market.

At the same time we continue our investment in our country's energy future, we are determined to find more ways to cut costs and operate more efficiently, so that we can justify every dollar that we spend.

I will be pleased to answer any questions Members of the Subcommittee may have.

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

PATRICIA FRY GODLEY

Assistant Secretary for Fossil Energy

Patricia Godley became the U.S. Department of Energy's 7th Assistant Secretary for Fossil Energy on July 25, 1994. The President had announced his intent to nominate her to the position on April 18, 1994, and she was confirmed by the U.S. Senate on July 21, 1994.

As Assistant Secretary, Ms. Godley oversees the national program to develop and demonstrate advanced natural gas, petroleum, and coal technologies. She is responsible for the Federal fossil fuel research and development program. She also oversees the Clean Coal Technology Demonstration Program, a multi-billion dollar government-industry partnership that is constructing and testing environmentally superior, first-of-a-kind coal-based energy facilities in the U.S. Similarly, she is responsible for managing the nationwide Reservoir Class Oil Recovery Program, a joint effort with the petroleum industry to demonstrate improved oil recovery technologies.

Ms. Godley also has the responsibility for overseeing the Strategic Petroleum Reserve, the nation's emergency crude oil stockpile, and the Naval Petroleum and Oil Shale Reserves, which include government-owned, commercially-producing oil fields in California and Wyoming.

Ms. Godley joined the Department of Energy in September 1993. Prior to becoming Assistant Secretary, Ms. Godley served as Special Assistant to William H. White, the Department's Deputy Secretary. In this capacity, she coordinated the Department's oil and gas initiatives in the Russian Federation under the Gore-Chernomyrdin Joint Commission on Energy and Space. She also participated in the Department's contract reform efforts and other domestic energy matters.

Ms. Godley practiced energy law for nearly fifteen years in Houston, TX, and Washington, DC. She joined the federal energy regulatory section of the Bracewell & Patterson law firm's Washington office in 1979. She transferred to the firm's Houston office in 1985 to expand her practice to energy transactions and litigation. She became a partner in the firm in 1986 and returned to the firm's Washington office in July 1992.

She has represented a wide variety of clients in the oil, gas, and electric utility industries in matters including asset sales and acquisitions, contract drafting and negotiation, business planning, Canadian and Mexican import and export matters and litigation on behalf of state and royalty owners, producers, marketers, pipeline companies, and end-users, as well as cogenerators and electric utility companies.

As a consultant for the World Bank, Ms. Godley drafted privatization legislation relating to natural gas transportation and distribution in Bolivia, Argentina, and the Russian Federation. She served as one of two reporters in the transportation group of the University of Houston Russian Petroleum Legislation Project in 1992. In this capacity she participated in the preparation of a draft treaty regulating the transportation of oil, oil products, and natural gas by pipeline among the Soviet republics.

Her recent publications include "Natural Gas Gathering Systems," Chapter 84, Energy Law and Transactions (Matthew Bender) and "Russian Energy Legislation: Regulating State Monopolies to Allow the Development of Competitive Markets," 13 Energy Law Journal 1 (1992). Both of these articles were published under her former name, Patricia Fry Eldridge.

Ms. Godley received a Bachelor of Arts degree from Trinity University in 1970, a Masters degree from Memphis State University in 1973, and a Juris Doctorate degree from the University of Texas in 1979, where she was managing editor of the Texas Law Review. She is admitted to practice before the United States Court of Appeals for the fifth, Tenth, Eleventh and District of Columbia Circuits and the United States District Courts in the Northern, Eastern, and Southern Districts of Texas. She is a member of the American, District of Columbia, Texas, and Federal Bar Associations.

Born in Illinois, Ms. Godley resides in Washington, DC.

August, 1994

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

George Rudins
Deputy Assistant Secretary for Coal Technology (Acting)
Office of Fossil Energy
U.S. Department of Energy

Mr. George Rudins is the Acting Deputy Assistant Secretary for Coal Technology (DAS/CT) and the Associate Deputy Assistant Secretary for Research and Development (ADAS/R&D) in the Office of Coal Technology of the Department of Energy's Office of Fossil Energy.

The DAS/CT is responsible for all of the coal programs within the Office of Fossil Energy. The ADAS/R&D is responsible for the management of all coal research and development programs within the Office of Coal Technology, which includes the following programs: atmospheric fluidized bed combustion, pressurized fluidized bed combustion, integrated gasification combined cycle, IFC, flue gas cleanup, gas stream cleanup, gasification, liquefaction, coal preparation, advanced combustion, waste management, and alternative fuels.

Since 1974, Mr. Rudins has held a variety of managerial positions at a progressively increasing level of responsibility. Responsibilities included the formulation of research and development strategies and the management of coal, oil, and gas programs. Positions held included Associate Deputy Assistant Secretary for Oil, Gas, Shale, and Coal Liquids, Director of the Office of Advanced Technology and Environmental Controls, Director of the Office of Advanced Energy Conversion Systems, and others.

Before joining the Federal Government in 1975, Mr. Rudins was with the Rand Corporation and the U.S. National Academy of Sciences. Mr. Rudins has devoted over twenty years to energy and the development of new energy systems.

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

Reginal "Reggie" Spiller

Reginal Spiller is the Department of Energy's Deputy Assistant Secretary for Gas and Petroleum Technologies, a position he assumed on December 14, 1993. The office is part of the Department's Fossil Energy program and oversees the development and demonstration of advanced technologies for natural gas and petroleum exploration, production and delivery.

Prior to joining the Department of Energy, Mr. Spiller was the International Exploration Manager for Maxus Energy Corp., headquartered in Dallas, Texas. During his five years with Maxus, Mr. Spiller was responsible for identifying opportunities and developing projects for oil and gas exploration and production in Africa, Europe, and the Middle and Far East. He has extensive international experience, having represented the company in projects carried out in Ethiopia, Algeria, Bulgaria, Egype, Madagascar, Slovakia, Australia, Tunesia and the United Kingdom. Before leaving Maxus, he also had initiated efforts in Syria, Angola, Poland, Czechoslovakia, Denmark, Turkey, Spain, and Senegal.

From 1987 to 1988, Mr. Spiller was the Offshore Exploration Manager for Primary Fuels, a subsidiary of Houston Industries. Primary Fuels is an independent oil and gas company with production interests in the Permian Basin and in several countries overseas. The company held several promising exploration prospects in the Gulf of Mexico. Mr. Spiller was recruited by Primary Fuels to initiate and supervise all exploration and production activities in the Gulf of Mexico and to provide geologic and geophysical support to other prospects developed by the company.

Mr. Spiller joined Primary Fuels from Elf Aquitaine Petroleum where, as manager for the company's southern district, he was responsible for prospect analysis in the Gulf of Mexico, the Louisiana and Texas Shelf, and deep water tracts. He joined Elf in 1984 as a project leader responsible for defining shelf and deep water depositional systems.

Mr. Spiller began his career and spent six years with Exxon USA in Houston as part of a major field study group. During his tenure with Exxon, he served as a Reservoir Staff Geologist, a Senior Operations Geologist, and an Exploration Geologist. As Senior Operations Geologist, he was responsible for exploration well planning and drilling and the evaluation of Federal waters off the continental United States.

Mr. Spiller holds a Master of Science degree in Hydro-Geology from Penn State which he earned in 1979 and a Bachelor of Science degree in Geology conferred by the State University of New York in 1974. He has authored several technical papers in petroleum geoscience and geology and is a member of the American Association of Petroleum Geologists, the Houston Geological Society, and the American Association of Black Geologists and Geophysicists.

He is married and has two children.

January 1994

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

MARVIN I. SINGER

Marvin I. Singer is Deputy Assistant Secretary for Advanced Research and Special Technologies in the Department of Energy's Office of Fossil Energy. His major responsibilities include managing Fossil Energy's research in fuel cells; and the advanced research and technology development activities (AR&TD), a crosscutting program that includes fundamental research in materials, coal science, combustion, instrumentation and diagnostics, bioprocessing of coal, and the University Coal Research Program.

From 1987 to 1992, Mr. Singer served as Deputy Assistant Secretary for Oil, Gas, Shale and Special-Technologies. Several studies, including The EOR Initiative, August 1988; Federal Oil Research: A Strategy for Maximizing the Producibility of Known U.S. Oil, August 1989; and the Oil Research Program Implementation Plan, April 1990, were prepared under Mr. Singer's direction. This latter publication has been the keystone of the Department's oil research and development program.

Mr. Singer has also managed an active program of international R&D collaboration in these technologies, including several bilateral and multilateral agreements. Mr. Singer has represented the U.S. Government at meetings of the International Energy Agency's (IEA) Coal Research Service, in London, and the Environment Directorate of the Organization for Economic Cooperation and Development, in Paris, and has served as the U.S. delegate to the Working Party on Fossil Fuels of the IEA's Committee for Research and Development. He was instrumental in the formation of the IEA's International Center for Gas Technology Information, and chaired the initial organizational meetings of this group.

Mr. Singer joined the Energy Research and Development Administration (ERDA), a predecessor agency to the Department of Energy, in December 1975, as Assistant Director for Environment and Socioeconomic Impact in the Office of Commercialization. His responsibilities included preparing studies, analyses, and legislative language in support of the Administration's proposed $6 billion synthetic fuels demonstration program -- a modest forerunner to the Synthetic Fuels Corporation. He designed a $300 million socioeconomic impact assistance program for states and local communities as part of the proposed program, and supervised the preparation of the programmatic environmental impact statement required by the National Environmental Policy Act.

In September, 1976, the $6 billion synthetic fuels program failed, for the third time, to be enacted into law by the Congress. The Office of Commercialization was dissolved, and Mr. Singer was transferred into the Office of Fossil Energy with similar responsibilities. He conducted studies to evaluate the environmental performance of fossil energy conversion technologies, and assessed the potential impacts of proposed environmental legislation on Fossil Energy's technology research and development program.

Mr. Singer's government career began in 1972 when he was appointed to the President's Council on Environmental Quality. As Staff Member for Energy Programs, Mr. Singer performed studies leading to Administration environmental decisions and analyzed the environmental consequences of energy policy decisions.

Prior to joining the government, Mr. Singer was with the Gulf Oil Corporation, in Pittsburgh, Pennsylvania. For eight years he held positions both in research and development and in corporate planning. His responsibilities included preliminary design and economic analysis of planned refinery and petrochemical additions, engineering and economic evaluation of laboratory scale processes proposed for additional development, integrated planning for regional refining, supply and distribution operations, and the financial analysis of foreign and domestic mergers, acquisitions and dispositions.

Mr. Singer earned a B.S. in Chemical Engineering from the Massachusetts Institute of Technology, an M.S. in Chemical Engineering from Columbia University, and an M.S. in Industrial Engineering and Operations Research from the University of Pittsburgh.

While at Columbia University, Mr. Singer was inducted into the Society of Sigma Xi, an honorary research society. In January, 1994, he received a DOE Special Service Award for his role as the senior member of the Source Evaluation Board to select the management and operations contractor at Fossil Energy's Bartlesville, Oklahoma research facility.

Mr. Singer is a member of the American Institute of Chemical Engineers, the American Chemical Society, the Society of Petroleum Engineers, and has served as Board Member and Treasurer of the Northern Virginia Youth Symphony Association. Mr. Singer speaks fluent conversational French, and some Spanish. He resides with his family in Reston, Virginia.

2-16-95

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

CAPTAIN ERNEST. R. HUNTER, CEC, USN

Captain Hunter is the Deputy Assistant Secretary and Director for the Naval Petroleum and Oil Shale Reserves, Department of Energy, Washington, D.C. He reported to this position on August 8, 1994.

As the Deputy Assistant Secretary, Naval Petroleum and Oil Shale Reserves, Captain Hunter is responsible for over 210,000 acres of reserves in California, Wyoming, Colorado, and Utah. With a budget of close to $200 million per year, Captain Hunter heads a staff of about 79 federal employees and over 1000 contractor personnel located in Washington, D.C.; Elk Hills, California, and Casper, Wyoming. His program produces over $400 million annual revenues for the United States Treasury from the sale of oil and gas from these reserves The Naval Petroleum and Oil Shale Reserves are operated under guidelines established by Congress pursuant to Public Law 94-258 Captain Hunter is responsible for the exploration, development, protection, and operation of these reserves.

Prior to reporting for his new assignment, he attended the Industrial College of the Armed Forces at the National Defense University where he earned a Master of Science Degree in National Resources Strategy. Captain Hunter has over 21 years of Naval Service as Civil Engineer Corps (CEC) officer during which time he has served in a wide variety of facilities engineering management, special staff and headquarters positions. His most recent operational assignment prior to reporting to the Industrial College of the Armed Forces was Deputy Public Works Officer and Deputy Officer in Charge of Contracts for the $150 million Base Operation Services Contract for the Naval Submarine Base, Kings Bay, Georgia Prior to that he served as the independent Public Works Officer for the Naval Ordnance Station, Indian Head, Maryland In addition to his other facilities engineering management positions, he has served with the Navy SEABEES, served as Executive Officer of a major training command and as personnel assignments officer for the Navy's 12,000 SEABEES.

Captain Hunter is a registered Professional Engineer (PE) with a Bachelor of Science degree and Masters of Engineering degree in Electrical Engineering and a Master of Science degree in National Resources Strategy. He is certified by the Institute for the Certification of Computer Professionals (ICCP) as registered Associated Computer Professional. He is married to Brenda Carroll (Newton) Hunter and they have a sixteen-year old son, Ernest Ray II, and a nine-year old daughter, Britney Nicole.

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

RICHARD (RICK) D. FURIGA

Richard (Rick) D. Furiga is currently serving as Deputy Assistant Secretary for Strategic Petroleum Reserve, U.S. Department of Energy. As Deputy Assistant Secretary, he is responsible for management of the Strategic Petroleum Reserve which is the largest crude oil storage program in the world with about 570 million barrels held in reserve along the Texas and Louisiana gulf coastline.

Mr. Furiga joined the Strategic Petroleum Reserve in August 1977. He has been Deputy Assistant Secretary since January 1982.

Mr. Furiga was an officer in the U.S. Navy from 1957 to 1977. His assignments included management positions in the petroleum logistics field, such as Director, Navy Energy Office and Director, Technical Operations, Navy Petroleum Office. He is a Vietnam veteran having served with the Mobile Riverine Force in the Mekong Delta in 1968.

Mr. Furiga was born June 20, 1935, in New Eagle, Pennsylvania. He graduated from the U.S. Naval Academy in 1957 with a Bachelor of Science Degree in Engineering. He received a Master of Science Degree in Petroleum Management from the University of Kansas in 1972.

Mr. Furiga is married to the former Janet Marie Pietroboni. He has three children by a previous marriage: Christiann, a graduate of the University of Virginia; R. Colin, a graduate of Muhlenberg College and the University of Pennsylvania School of Law; and Merewyn, a graduate of Chestnut Hill College in Philadelphia.

April 1993

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

CHARLES J. ROY
Financial Systems Officer
Office of the Assistant Secretary
Office of Fossil Energy
U.S. Department of Energy

Chuck Roy is the Financial Systems Officer in the Office of the Assistant Secretary for Fossil Energy (ASFE) in the U.S. Department of Energy.

Mr. Roy provides advice and guidance to the Assistant Secretary for all matters relating to the budget preparation, justification and execution of all Fossil Energy (FE) programs.

Mr. Roy provides guidance to the Budget Office and Fossil Energy field offices on planning, formulation, presentation and justification of the FE budget and advises the ASFE on important budget issues relative to budget formulation, execution and management of FE programs. He assures that the ASFE's priorities are reflected in the preparation and justification of the internal review, the Office of Management and Budget (OMB) and Congressional budget requests and in the distribution of operating budgets.

He is responsible for coordinating and preparing all Congressional hearing documents, coordinating the review of Testimony, Questions and Answers, Inserts for the Records, and Capability Statements. He is responsible for testifying at Congressional hearings when called upon to do so by the Assistant Secretary.

Mr. Roy is the liaison between the FE program and Congressional Staff, Office of Management and Budget, as well as the Offices of the Secretary and Deputy Secretary of Energy. He coordinates FE activities with the Office of the Chief Financial Officer and maintains liaison with Office of Management and Budget on budget and policy negotiations surrounding FE programs. He participates in Secretarial briefings on the FE budget and assists in the presentation of the FE program to senior level department officials.

He is an active participant in various departmental task forces on financial management improvement.

Mr. Roy began his Federal career with the Department of Interior's Office of Coal Research in 1974. In 1975 as Fiscal

Liaison Officer for the Assistant Administrator for Fossil Energy. In the newly formed Energy Research and Development Administration he performed a variety of financial functions.

In 1977 his office was incorporated into the new Department of Energy where he functioned as a Budget Analyst in the Fossil Energy Program.

Mr. Roy moved to the Office of the Assistant Secretary for Management and Administration/Controller in 1982 and served as a Supervisory Operating Accountant, Chief of Headquarters Accounting Operations and Chief of Special Accounts. In 1984 Mr. Roy returned to the Office of Fossil Energy and in 1988 as Financial Systems Officer assumed his current duties.

Mr. Roy received a Bachelor of Arts Degree from St. Mary's Seminary and University in 1973 and a Master of Science Degree in Accounting from Georgetown University in 1980. He is a member of the Association of Government Accountants and Association of Budget and Program Analysis. In 1994 Mr. Roy was recognized as a Certified Government Financial Manager. Mr. Roy was nominated for the Donald L. Scantleberry Award for Financial Management and the U.S. Treasury Award for Distinction in cash management. Born in Massachusetts, Mr. Roy resides in Burke, Virginia with his wife Mollie and their two sons.

October, 1994

OPENING REMARKS

Ms. GODLEY. Thank you, Mr. Chairman. I have submitted a prepared statement for the record that describes in detail the Fossil Energy budget, as well as some of the results that we expect to achieve in fiscal year 1996 from our programs. In my oral remarks this morning, I want to consider briefly just some of the issues underlying the current debate about the Federal role in protecting the energy security of this country.

I would like to begin by enumerating several points on which there is widespread agreement. The first point is ensuring that we can meet our domestic energy needs so that we can maintain our economic competitive strength in the world marketplace is a national security issue.

Issues of energy supply and use crosscut every industry and affect quality of life of every citizen in this country. No other commodity has as pervasive an impact on the economic security of the United States as does energy, and we will need about 20 percent more energy in the year 2010 than we are using today.

Second, energy produced from gas, coal and oil provides most of the energy that heats our homes, fuels our cars, and runs our industries. Eighty-five percent of the energy we consume today comes from fossil fuels, and that percentage is likely to hold through the year 2010.

Third, we rely increasingly on imported oil and oil products. Fifty percent of the oil used in the United States in 1994 was imported oil, a record level. At current rates, it will be 60 percent by the year 2010. In fact, more than $51 billion, a billion dollars a week, flowed out of this country in 1993 to pay for oil imports.

Now comes a point upon which views may differ: Should the Federal Government invest in energy production and use resources in this country? Should we be investing in those resources?

Let's first consider the Federal investment in the development of energy technologies. As you are aware, the time span from the development of an idea to technology that is accepted by the marketplace is about 20 years, whether you are talking about microchips or a capital-intensive fluidized bed combustor for power generation. As technologies move through laboratory testing, scale-up, and demonstration, investment risk progressively decreases, until the marketplace accepts a new technology as a stepping stone to competitive success.

So given this context, should the Government invest in the development of energy technology and, if so, when should it invest?

Our answer is the Federal Government should invest only when market participants are unwilling or unable to take the high risk inherent in the development of needed technology in areas of national strategic importance.

This criteria, we believe, justifies the investment by the Office of Fossil Energy in two principal areas of technology: Technologies that increase our ability to find and produce domestic natural gas and oil. Second, technologies that increase our ability to use coal and natural gas to generate electricity more efficiently, cleanly and affordably.

I will take just a few minutes to talk about the oil and gas industry, and then the electric power industry as it pertains to our programs.

Our domestic oil industry is undergoing a radical change in its structure. The major oil companies are moving out of the United States, taking their operations overseas where prospects are brighter. In the oil fields of the United Kingdom, for example——

Mr. REGULA. I am going to perhaps interrupt you occasionally. Prospects are brighter. Are they brighter because there are greater resources or because there are less regulation?

Ms. GODLEY. Both.

Mr. REGULA. So it is a combination?

Ms. GODLEY. That is right.

In the oil fields of the United Kingdom, for example, the average well produces almost 3,900 barrels a day. In Saudi Arabia, the average well produces more than 6,500 barrels a day. In the United States, in the lower 48 States, the average well produces 10 barrels a day. In addition——

Mr. REGULA. How about the Middle East—how about the Far East, Indochina, in that area over there? Do you have any numbers on wells in that part of the world?

Ms. GODLEY. I do, but I don't have them with me this morning. But they are much higher than the United States across the board.

[The information follows:]

AVERAGE WELL PRODUCTION IN THE FAR EAST

The average well in Indonesia produces approximately 175 barrels of oil per day. In the Middle East, the average production per well is approximately 2,500 barrels of oil per day. In the Far East, the average production per well is approximately 100 barrels of oil per day.

Mr. REGULA. Yes, I assume so. Okay.

Ms. GODLEY. Then to pick up on your second point, the increasing environmental requirements in the United States also have increased the cost of producing gas and oil in this country above the per unit costs in other countries.

As a result, the major oil companies have cut their investment in domestic oil and gas production dramatically, resulting in the loss of 500,000 jobs in this country in the last ten years. They are also cutting back their domestic research and development budgets and closing their research labs.

And yet, there is plenty of oil and gas left to produce in the United States. The USGS estimates now that 2.5 times the oil and 1.5 times the natural gas that it estimated to be technologically recoverable in 1989 estimates. So they are doubling their estimates of oil and almost as much of natural gas.

Today, 85 percent of the wells drilled to recover these reserves, though, are drilled by independent producers, not the major oil companies. One-third of these companies have fewer than five employees. And two-thirds have 20 employees or less. Most of these companies not only cannot afford research and development programs, many don't even have a geologist on staff.

As recovery rates go down and costs go up, these producers also are abandoning their wells at increasing rates. These abandonments effectively mean we will lose the oil and gas remaining in the abandoned fields, perhaps 50 to 70 percent of the original oil in place, forever.

Mr. REGULA. Do you think if these were done by a large company, that it would be continued for a longer period of time?

Ms. GODLEY. I think the large companies aren't doing them at all, for the reasons we just talked about. It is not as cost effective to do it as overseas. With increasing technologies, with better technologies, we are driving the costs down of maintaining and drilling and producing from these wells, making it easier for the independents to maintain production and not to abandon the wells.

So the United States taught the world how to find and drill for hydrocarbons, that is a fact. But if we abandon Federal investment in the research and development today, the oil and gas industry, primarily the independent producers, will no longer fill that gap. They cannot do it.

Looking at the electric power generation side, our Nation's electric power needs, as you know, will increase by more than 21 percent by the year 2010, enough to require more than 1300 new power plants with 100 megawatt capacity. Meanwhile, environmental requirements are becoming more stringent, particularly in the area of emissions into the air and disposal of waste products. Local communities are demanding even cleaner performance than is required by Federal standards in the siting of new power plants.

Similar concerns are magnified exponentially in international electric power generation. The global market for clean electric power generation is exploding, as you know, and you remarked on. It will increase by an estimated 700 million to $1 trillion in the next 20 to 30 years. If we could capture only 20 percent of this market, we could create more than 40,000 new jobs in the United States and even a stronger economy.

Mr. REGULA. You are talking about 20 percent of the market for Clean Coal Technology and generating plants?

Ms. GODLEY. Yes, worldwide.

Mr. REGULA. Worldwide, yes.

Ms. GODLEY. But the competition for this market internationally is stiff. The governments of countries like Japan have targeted this market and are working jointly with their industries to develop high tech exports. In fact, seven OECD countries spend more on energy research and development as a percentage of GDP than does the United States. Japan spends the most, three times more than the United States.

If U.S. development does not keep pace with the development of foreign suppliers, the U.S. will quickly lose its leadership in the highly competitive international market.

Industry does not have the capability to invest on its own in the development of high risk, capital intensive, advanced power generation technologies. Most electric utilities are highly regulated. For these power companies, investments in R&D are tightly controlled by State utility commissions and profit margins are limited. As a result, regulated utilities generally cannot afford to invest directly in R&D, and they are withdrawing their membership in industry sponsored consortia as well.

Generally, the unregulated segments of the power industry, the independent producers and the equipment manufacturers, are adverse to investments that don't have an immediate or short-term payback. This is a phenomenon that we are enjoying throughout our current domestic industries.

Independent power producers are already highly leveraged. Long range R&D is never—rarely, if ever, part of their portfolio. Equipment vendors also will not invest alone in high risk, large leaps in technology with long-term payoffs, certainly not in time to meet critical market windows opening around the world in the electric power generation markets.

Federal participation and investment in the development of coal- and natural gas-fired advanced power systems technology will result in the availability of U.S.-built, cleaner power systems that will produce new electric power when it is needed with fewer energy resources, at potentially lower costs than is possible today.

But we also, just on the end part of my opening remarks, we also believe that it is the market, not the Federal Government, that should decide what technologies should be developed. That is why virtually all of the projects undertaken by the Office of Fossil Energy have a significant degree of cost sharing with industry participants.

In fact, cost sharing across all of Fossil Energy's RD&D activities as proposed in fiscal year 1996 will leverage the Federal investment of $437 million, that is our new request for new money in RD&D activities, to more than $693 million, almost a 40 percent investment of non–Federal funds in the projects that we are undertaking.

This high level of cost sharing assures that the market decides what technologies should be developed. These companies are putting their own money on the line.

I would address also our proposals with respect to the Strategic Petroleum Reserve and the Naval Petroleum and Oil Shale Reserves, although those issues are addressed in more detail in my prepared written remarks. So I will just save my further remarks on the SPR and the NPR for questions and answers.

And I would conclude, Mr. Chairman, by noting that there is strong nonpartisan agreement that we must reduce the national deficit. What surprises me actually is that there appears to be no equivalent feeling of urgency that we reduce our national energy deficit.

Just as with the national deficit, we must find ways to cut the cost of energy through strong and aggressive support of the development of technologies that will allow us to produce and to use energy resources more efficiently, cleanly and affordably. We must also make sure that we have sufficient insurance against disruptions in oil supplies. And we must divest the government of non–Federal activities.

The fiscal year 1996 budget for the Office of Fossil Energy reflects, in our view, a balanced and appropriate investment of Federal funds to accomplish these objectives.

This completes my opening statement, Mr. Chairman.

I would like to introduce the two folks sitting with me at the table. George Rudins is the Deputy Assistant Secretary for Coal Technology, and Reginal Spiller is the Deputy Assistant Secretary for Oil and Gas Technologies.

Thank you, Mr. Chairman.

Mr. REGULA. Would either of you like to make any comments?

ENERGY SUPPLY PORTFOLIO

Mr. SPILLER. We have no prepared statement, Mr. Chairman.

Mr. REGULA. Well, thank you, Secretary Godley. Seems to me like we have got a lot of challenges here to look into energy in the future. I spoke to a group this weekend, and one of the students said, why don't we develop alternative fuels. I think the implication was not fossil, but some of the esoteric energy sources.

What would have been your response?

Ms. GODLEY. My response is—I am so glad you asked that question. My response is that I think that we need a balanced energy supply portfolio, just like you have an investment portfolio for your family or companies.

Mr. YATES. He has got a big one.

Mr. REGULA. Nothing compared to yours. I will trade you, even up.

Mr. YATES. Including your farm?

Mr. REGULA. Well, no, no. Okay.

Ms. GODLEY. Then this analogy will be especially relevant. In our national energy supply portfolio, we have some short-term investments, some long-term investments, some high risk and some low risk investments. We already have as part of our portfolio natural gas, coal, and oil. We have hydropower. We have some of the renewable supplies that we are developing now with respect to solar energy and wind power and so forth.

And my personal view and that of the Department is that we need to invest in each one of these pieces of our national energy supply portfolio. I suppose the debate comes with how much do we want to invest and when. Do we want to invest now in high risk long return, do we want sure deals, and do we want a few CDs in our portfolio? The whole point being that we want to have that balanced portfolio.

So my answer would have been to that student, we want to invest in each one of those pieces of our energy supply portfolio.

REFORMULATED GASOLINE

Mr. REGULA. I think in "USA Today", there was a story on reformulated gasoline, which was of course designed to reduce air emissions, but according to this story, people are very unhappy with it, where it has been put in place. Their engines don't run as well.

Mr. YATES. It costs 7 cents more a gallon.

Mr. REGULA. Costs more per gallon. According to the article people in Kentucky were driving to Ohio and Indiana to purchase gasoline so that the station owners were upset. Do you see any solution to that or is this just a price everybody is going to have to pay?

Ms. GODLEY. I think that with respect to the imposition of regulations on our citizens and our industries, that those regulations should be reasonably based with input from all affected parties. And this is the effort that the EPA is pursuing now with its common sense initiatives.

For example, in the refining business, to try to rationalize regulations as they are applied to particular industries. I think that is the right direction in which we ought to be heading.

Mr. YATES. This is one of the alternative fuels you were talking about, isn't it?

Ms. GODLEY. Reformulated gasoline? I don't believe so.

Mr. YATES. Isn't it mixed with ethanol, isn't that an alternate fuel?

Mr. REGULA. Ethanol is. I am not sure that——

Mr. YATES. Well, the mixture is an alternate to the straight gasoline.

Ms. GODLEY. You are beyond my expertise.

Mr. YATES. I'm sure I am not, because your expertise is much more than mine.

Mr. REGULA. Do you have anyone with you that could tell us what happens to make reformulated gasoline versus ordinary gasoline?

Mr. SPILLER. We can take a shot at it. Very simply, reformulated gasoline is a mixture of either the fundamental gasoline with ethanol or it could be methanol, whatever the by-product is. It is something that adds oxygen to the gasoline, to allow for an effective and a cleaner burning fuel.

Mr. YATES. I had the impression it was an alternative to straight gasoline.

Mr. SPILLER. I am sorry?

Mr. YATES. I always had the impression that it was an alternative to straight gasoline.

Mr. SPILLER. I don't think—I don't believe that reformulated gas is considered an alternative fuel. I think methanol and ethanol, which of course can be used in combustion, would be considered an alternative fuel. But methanol and ethanol would be considered additives to fundamental gasoline.

Mr. YATES. As an additive, okay. I will accept that. I stand corrected.

Mr. REGULA. Mr. Yates, I will yield to you for some questions.

MILD GASIFICATION PROJECT IN ILLINOIS

Mr. YATES. Thank you, Mr. Chairman. I appreciate that.

You know, Mr. Regula has long been a champion of the Clean Coal Program. I think that, by and large, there has been outstanding improvement in our clean fuel as a result of these programs. That is one of the reasons that I was a little surprised when I noticed among the items that might be subject to rescission, the mild gas technology, which I understood to be a pretty good program. Is my impression wrong on that?

Ms. GODLEY. No, sir, it is considered to be a pretty good program.

Mr. YATES. And that it was the subject of a competitive bid at the outset, wasn't it?

Ms. GODLEY. Yes, sir.

Mr. YATES. And you have very strong cooperation from the private sector in that program, have you not?

Ms. GODLEY. Yes, we do.

Mr. YATES. As I remember, the private sector is putting up, I think, maybe a third of the total cost.

Ms. GODLEY. It is a fair percentage, yes, sir.

Mr. YATES. It is a very fair percentage. Why should that be terminated?

Ms. GODLEY. As we are looking forward to tighter budgets and budget constraints, reducing the cost of our doing business, we are having to make some difficult choices. We believe that all of the programs that we are undertaking and have in the fiscal year 1994 and 1995 time period, are good programs, are worthy programs, worthy of investment.

As we try to reduce our budgets in some of these areas, we are making some choices and having to make some choices based on priorities, where we want to put our investment money, particularly in the advanced power systems. We are focusing much of our budget on the gas power, the advanced power systems. I think that the southern Illinois project that you are referring to, the mild gasification project, is a project designed to test a gasifier to convert coal to new fuel forms. And what I would like to do is turn over—

Mr. YATES. Mainly coal?

Ms. GODLEY. Turning coal into new fuel forms.

Mr. YATES. Which is primarily coke, as I understand.

Ms. GODLEY. And as we are focusing more on our electric power generation portion of our portfolio, we are having to pull back from some of the technologies that we believe are not going to pay out until well into the future.

What I would like to do is ask our Deputy Assistant Secretary for Coal Technologies to talk more about the technological reasons for that prioritizing.

Mr. YATES. That is good. We have to have coke, don't we? We, the industries of the country, steel and other industries, have to have coke as the primary source of fuel. Isn't that correct?

Mr. RUDINS. Yes.

Mr. YATES. So we now import a lot of it, do we not?

Mr. RUDINS. Yes, we do.

Mr. YATES. And canceling this program will destroy whatever effort the United States has to be able to produce the coke in a clean manner by itself. Isn't that correct?

Mr. RUDINS. Well, we do have other technologies as well that are associated with the production of coke.

Mr. YATES. Are they better technologies than the one in this program?

Mr. RUDINS. Well, it is difficult to say. There is the conventional way of producing coke through coke ovens, and then there also is the mild gasification process which represents a new way of approaching that.

Mr. YATES. And you have, as I indicated before, strong private enterprise support. I think, who is it Kerr–McGee in this instance, which is the corporate partner of the government in moving ahead on this program.

How much money has Kerr–McGee invested so far?

Mr. RUDINS. Well, the government or the total DOE investment has been $14.1 million so far.

Mr. YATES. And how much has private enterprise invested?

Mr. RUDINS. It is approximately 20 percent of that.

Mr. YATES. I had an impression it was closer to a third, rather than 20 percent.

Mr. RUDINS. I may be off. I thought it was 20 percent.

Mr. YATES. The figures I had were 14 million and something and three plus million. So it would be 14.1 and industry has contributed 3.5. I will let you figure out the percentages. This is already industry's commitment. Incidentally, what does Kerr–McGee say about this, the fact that this program is going to be terminated? Have you talked to them about it? Will this require termination expenses?

Mr. RUDINS. The answer is it probably requires some termination expenses, but they would be available within the dollars we currently have in the program.

Mr. YATES. If you had your druthers, would you just as soon continue this program, if you weren't faced with the gigantic cuts proposed by the new thrust that is running through Congress?

Mr. RUDINS. If I could answer that question from a relative priority viewpoint——

Mr. YATES. That is what I want you to do.

Mr. RUDINS. The emphasis in the budget as submitted, the total coal R&D budget, has been on power generation. The main reason for that is the need for electricity. Coal is synonymous with electricity production. Eighty-eight percent of the coal mined in this country in 1993 went to produce electricity; 53 percent of the electricity in 1993 was generated from coal. So with that particular priority, the need for the utilization of coal for electricity and increasing environmental requirements, technology options are needed to in fact be able to use coal, the priority has been on power generation.

The mild gasification category of technologies is in the fuel side. Although it is important, it is viewed as a lower priority than power generation. So in that context, in a tight budget situation, as Secretary Godley indicated, where we had to make some choices was in the lower priority area, that is where we made that particular choice.

Mr. YATES. Well, now, is the GPIF program, which is in West Virginia, a competitor to this program?

Mr. RUDINS. No, because the mild gasification technology, even though it shares the same label, gasification, is actually a very different technology. Mild gasification operates on coal to generate either fuels or char or coke or a variety of products. The GPIF facility is in the category of developing an advanced gasifier for integrating with a combined cycle gas turbine system. So it is in the area of upgrading and improving the efficiency of power systems. So they are in two different areas.

Mr. YATES. Not because West Virginia is a more preferred location than Illinois?

Ms. GODLEY. No, sir. I was born in Illinois, I can attest to that.

Mr. YATES. Okay. There are others who were born in West Virginia and they think they have some influence, too. I have just one more set of questions now.

NAVAL PETROLEUM RESERVES

I want to ask about the Naval Petroleum Reserves. Why do you want to sell our reserves? It is a profitable enterprise, isn't it?

Ms. GODLEY. It is a profitable enterprise.

Mr. YATES. A very profitable enterprise?

Ms. GODLEY. It is a very profitable enterprise.

Mr. YATES. As I remember, you, the administration, had an appraisal some time ago, maybe as long ago as eight years ago, for the value of those reserves. It is something like $12 billion as I remember.

Is my memory correct on that?

Ms. GODLEY. I believe it is.

Mr. YATES. Then why in the world do you want to estimate its value now at, what is it, 1.54 or 1.5?

Ms. GODLEY. $1.6 billion is the net value.

Mr. YATES. Well, I am trying to get a comparison between the 12 billion and your figure. What is the figure you now have as its appraisal?

Ms. GODLEY. We don't have an appraisal on it, Congressman Yates. We are forbidden by Congress currently from hiring the professionals we would need to come in and actually value those assets. We put a ballpark figure of $2.7 billion, of a sale value that we would be able to sell those reserves at. If that is significantly lower than prior values placed on those reserves, that could be due to a number of factors, including the lower price—

Mr. REGULA. Is $2.7 billion, just the U.S. share, that doesn't include Chevron?

Ms. GODLEY. Correct.

Mr. YATES. I had the impression that it was lower than that, that it was 1.4, 1.6.

Ms. GODLEY. When you back out the revenues that we would have received, you get the net value to the government.

Mr. YATES. Well, what is the return that you receive on your investment? Is it in the neighborhood of 20 percent?

Ms. GODLEY. I can tell you, if I can go back and start by answering the question why do you want to sell.

Mr. YATES. You may answer it any way you wish.

Ms. GODLEY. Why and how are the two questions that I would like to address. Why is it that I think that there is a concerted viewpoint expressed by the taxpayers and the voters of this country to make the Federal Government smaller. If we were going to look for particular activities that the Federal Government ought not to be engaged in, this is one of them.

As you know, these reserves were originally acquired in the early 1900s to provide fuel for the Navy when the Navy shifted from coal-fired vessels to oil-fired vessels. Ultimately, they moved on to diesel-fired vessels. But then in the 1970s, we turned that field really into the National Oil Company. We basically produce the reserves and sell them for the highest price we can make on the commercial market in the United States today.

So the first reason why we want to sell them is because it is an activity that the Federal Government really—it is a non–Federal activity, it is an activity that should be privatized, that should be, we believe, conducted in the private sector. We also believe that we can earn a maximum value for that property in the sale of those properties under the process that we are projecting. And we are proposing to privatize the reserves in a two step process.

One, it is an imperative first step that we be able to put these assets of the Naval Petroleum and Oil Shale Reserves into a for-profit, federally owned government corporation. We currently cannot operate these reserves to their maximum value to the taxpayer even as they are owned by the Federal Government.

Mr. YATES. Why can't you?

Ms. GODLEY. There are several reasons, both administrative and financial. The financial one, in my view, is the most important. And that is with the budget process that we have, where we propose a certain amount of new monies to be able to spend on the Naval Petroleum and Oil Shale Reserves, and as budgets are restricting, that budget cycle typically takes, as you know, two to three years depending on when you start it.

We cannot make timely investments in these depleting oil fields under the current budget structure and fiscal structure we have. It takes us, unlike a commercial oil company, a private oil company that can make a decision on Monday that it is going to invest in a particular activity, and undertake that investment in a month or so, whatever the normal course of events would be, we have to wait a year and a half, two years, before we know we are going to have that money so we will be able to invest it.

It didn't matter so much when this was a huge field with really what appeared to be at one point unlimited reserves. These are now depleting fields and you have to invest more money in order to maintain the production and maintain the net revenues that you enjoy from them.

Mr. YATES. May I interrupt you and just say that a chart submitted to the subcommittee by your organization as to the revenues and budget authority indicates that for fiscal year 1996, you are going to have a profit of $285.9 million; for 1997, going to have a profit of $286.4 million; for 1998, a profit of $299.8 million; 1999, $289.3 millions; and for 2000, $274.5 million. That is a pretty profitable enterprise.

I yield to the Chairman.

Mr. REGULA. I think we will probably want to go into that some more. But we will have a second round of questions.

Mrs. Vucanovich.

NATURAL GAS AND OIL TECHNOLOGIES

Mrs. VUCANOVICH. Thank you, Mr. Chairman. Good morning, Madam Secretary. I am sorry I didn't hear all of your testimony. I really don't have a lot of questions. You may have touched on this.

Have you or is there any move to explore ways to get gas and oil without causing environmental concerns? In other words, I know that some geological surveys are done, I think, from satellites and other areas of that kind. You may have touched on this. I just don't know if that is in your jurisdiction or not.

Ms. GODLEY. Yes, it is in our jurisdiction in the Office of Fossil Energy, and we are pursuing a number of technologies and investing in a number of technologies directed to do just that, to both explore for and produce oil and natural gas in ways that are less harmful to the environment.

Mrs. VUCANOVICH. Well, that is good to know, because I think we have to be looking at new ways, particularly—well, in ANWR and many other places, but I just wondered if that was part of it.

I have no further questions. Thank you, Mr. Chairman.

Mr. REGULA. Mr. Skaggs.

FOSSIL ENERGY TECHNOLOGIES BROUGHT TO MARKET

Mr. SKAGGS. Thank you, Mr. Chairman.

Good morning. Sorry I was late getting here as well. Please interrupt if I am asking things that you have already covered, and I will read the record instead of taking your time.

As you may be aware, our first hearing of this Congress featured testimony from an array of think tanks; CATO, Heritage, some others. I think they were unanimous in recommending that there be no taxpayer money going to energy R&D programs of any kind whatsoever. Clearly you disagree with that, but I think the testimony and the climate serves to frame a kind of shift or difference in the burden of proof that the Department has to sustain these days in supporting these programs.

I just wanted to ask either for your oral presentation this morning or perhaps for elaboration in the record, for examples of technologies that the programs that we are proposing to continue have brought to market viability or near viability that would not have happened if left to private investment decisions alone.

I think you are going to have to meet that kind of a proof requirement to really sustain this part of your budget these days, and I would like to ask your comments again this morning. It would be useful to have as much detailed elaboration in the record as possible, including, I would think, whatever documentation from private industry you have or can obtain in support of your own suspect, self-serving statements. I say that somewhat facetiously.

Ms. GODLEY. I understand that, Congressman. One of the issues or statements that I would take issue with that some of the think-tank witnesses, as you described them, made during these earlier hearings, is the type of statement or the idea that energy is just like any other commodity. I think that that is not true.

Energy, as a commodity, supports and drives every industry in this country. Without sufficient supplies of energy, we would not have a growing economy or an economy at all.

I think that there are significant issues facing our country that are energy related that cannot be addressed by industry. One of those we were speaking earlier about how to invest in a balanced energy supply portfolio, which would not just be short-term immediate results type of investments. You don't have only short-term investments for your family, and I suggest that we need some long-term investments, high risk investments in technologies in this country, that will make certain that we have energy supplies when we need it, and make certain that we can use those supplies in ways that are environmentally benign and will also allow us to conserve our energy supplies for as long as we can.

I think that the emphasis in this country on the increasing dependence on imported oil supplies is an important understanding to have. It is an important national security issue, as I believe that you will agree. And that makes, I think, energy as a commodity different from other commodities in this country, all of those factors together.

I think that the question of what technologies has Federal investment created that wouldn't have been created but for Federal investment, we will come up with some examples of that. I think that the question often, though, is when would we have come up with those technologies, not whether. And when would we——

Mr. SKAGGS. I accept the amendment. But the timing is obviously critical, and I think to elaborate on that and the timeliness is a perfectly reasonable interpretation on my questions.

Ms. GODLEY. And with those—with that statement, I would like to provide some examples to you for the record.

[The information follows:]

INFLUENCE OF FEDERAL INVESTMENTS ON TECHNOLOGIES

In many cases, the investment of the Federal Government, most often jointly with industry, has proven the technical viability of a high-risk advanced concept, providing a critical stepping stone for industry to move the technology into the market. In other cases, Federal involvement has accelerated the development of technology, making it available for introduction into the market many years earlier than would have been possible if industry, alone, had been the sole funding source.

The following are examples of both categories of successes where the Federal role has been particularly instrumental:

Natural Gas and Oil Exploration and Production

The United States taught the world how to locate and drill for hydrocarbons. American firms traditionally have led the world in technological development, and as a result, modern natural gas and oil exploration and production represents the quintessential "high tech" industry. The Federal program has been a major contributor to many of the most significant advances. For example:

Polycrystalline Diamond Drill Bits

One of the most important advances in drilling technology took place in the 1980s when the Office of Fossil Energy brought to commercial readiness a new drill bit design using polycrystalline diamond cutters. Previous diamond cutting bits failed after prolonged periods of drilling because the cutting assembly would break away from the bit. Sandia National Laboratories, as part of a Fossil Energy program, developed a diffusion technique to permanently bond the cutters to the bit. In certain rock types or where time is especially critical (for example, in drilling offshore wells), the faster, longer-lasting drill bits can save as much as $1 million per well.

Today, 13 companies worldwide fabricate synthetic diamond bits using state-of-the-art techniques developed in the Federal program.

Crosswell Seismic Technology

Traditionally, companies have searched for natural gas and oil by sending sound waves from the surface deep into underground formations and measuring their reflectance. Because the sound waves pass through thousands of feet of rock during their round trip, they become diffused and less effective. A new technique, developed in DOE's national laboratories and now being offered commercially, overcomes many of these limitations. It could represent the next major advancement in geologic imaging technology.

Called "crosswell seismic imaging," the technique minimizes much of the subsurface interference by lowering the soundwave generator and receiver into the boreholes. Sound waves travel directly from wellbore to wellbore over much shorter distances and at higher frequencies. The results are resolutions beyond what the industry imagined possible just five or six years ago. Where traditional techniques can "see" geologic objects 50 feet across, the crosswell technique can see objects 5 feet across, providing much more detailed images of the rock formations and potential gas and oil deposits.

Sandia National Laboratories and OYO Geospace Corp. have developed seismic receivers rugged enough to be lowered nearly 3 miles underground. The receivers are now on the market. Los Alamos National Laboratory, working with Exxon, is developing a new seismic source that would use explosives to generate sound waves deep in a wellbore. Both laboratories are working with private companies to develop a hydraulically-powered vibrator tool as a downhole source of sound waves.

To link the seismic system of tomorrow, several firms are working with national laboratories to develop a fiber optics data communications system that can transmit enormous amounts of data to the surface much faster than conventional logging cable. For areas where wells don't already exist, a national laboratory-industry team is developing miniature seismic sensors that can be inserted into"micro-holes" less than an inch in diameter. "Micro-holes" may be a very inexpensive way to probe a formation to learn its oil or gas potential before drilling more expensive wells.

A New Way of Thinking in Utah's Green River Formation

Throughout its production history, the Uinta Basin in Utah's Green River Formation has baffled oil producers. Its complex geology, laced with hundreds of discontinuous oil-bearing zones, rendered impractical many oil field methods that are commonplace elsewhere - or so producers thought.

Now, a DOE-cosponsored oil recovery field demonstration project is proving conventional wisdom wrong. And the direct return to the Federal Government - royalties from neighboring operators now adopting the demonstrated techniques - will more than pay for DOE's entire investment ($48 million) in all its jointly-sponsored projects in the "Class I" Reservoir Class Field Demonstration Program.

The initial project began in 1992 when Lomax Exploration Company of Salt Lake City, with cost-sharing from DOE, began a high-risk waterflooding project near Roosevelt, UT. Injecting water under pressure to force more crude oil through a reservoir is used in hundreds of thousands of oil fields throughout most of the United States. But operators in the Uinta Basin were skeptical. Many had been unable to maintain economical production, and as the flow of oil slowed, several had shut down operations, even though only 5% or less of the Basin's oil had been produced.

The Lomax field test, however, showed that a properly conducted waterflood could be successful in the Uinta Basin. The initial field test could lead to an additional 2.6 million barrels of new oil reserves from the Lomax properties alone, and already neighboring operators are replicating the success. Ultimately, the recoverable reserves of oil in the Uinta Basin could total 3.5 billion barrels - a huge payoff from reservoirs that once were almost abandoned.

Through-Casing Logging for Oil/Gas Wells

Evidence is mounting that the United States has large amounts of remaining natural gas and oil in known fields. Much of this gas or oil may have been missed or bypassed by older drilling and production technologies. In some cases, older wells were unknowingly drilled through these deposits in search of more productive "pay zones." Once metal casing is inserted into the wells, however, it has been impossible to use electrical resistivity tools (one of the most common hydrocarbon detection techniques) to pinpoint missed deposits. The metal casing created too much interference, rendering conventional electrical resistivity logging devices ineffective - until now.

A Fossil Energy-sponsored research project with ParaMagnetic Logging, Inc., has led to a way to "see" through the metal casing. The advanced tool, developed with joint funding by DOE and the Gas Research Institute, overcomes the interference problem. Using it, companies are now able to go back into 30- and 40-year-old fields, some of which were never "logged," and using existing wells, pinpoint untapped hydrocarbons. By avoiding the expense of redrilling, this Fossil Energy success story could lead to the economical production of oil and natural gas that might otherwise have been abandoned.

Wax Cleanup in Oil Wells

About a third of all U.S. oil wells suffer a common problem - the slow buildup of paraffin in the wellbore that can clog the well and pumping machinery. A technique called "hot oiling," in which heated oil (or water) is pumped back into the well casing to melt the paraffin, works fine in some wells but is less effective in others and in some cases, can cause more harm than good. Producers need a way to predict if hot oiling will be effective before going to the expense of installing the necessary equipment.

Because of a DOE program at Sandia National Laboratory, the industry has such a method. A new software program, available to industry free of charge, predicts where paraffin will be a problem and whether hot oiling will be effective.

Paraffin buildup is particularly bothersome in stripper wells (that produce less than 10 barrels per day), but because of the Federal program, the small independent producer now has a way to counter the problem.

Wireless Downhole Telemetry

One of the most important, time-saving innovations in today's drilling industry is the "measurement-while-drilling" - or MWD - instrument. Transmitting directional signals from near the bit while drilling is underway allows an operator to adjust the trajectory without interrupting the drilling operation. Before MWD, operators would have to cease drilling, remove hundreds or thousands of feet of pipe, and lower an instrument into the well to check location and bottomhole conditions. The twisting motion and path of the drill string made it impractical to hardwire a downhole telemetry system.

DOE helped pioneer a wireless system that has brought MWD into widespread commercial use. The Department's Fossil Energy program sponsored research into the use of "mudpulse telemetry," a technique in which pressure pulses are sent from near the drill bit to the surface through the drilling mud (the drilling mud is circulated from the surface to the drill bit to remove cuttings and cool the bit). Today, mudpulse telemetry has gained wide acceptance in the drilling industry.

More recently, DOE's Morgantown Energy Technology Center has been joined by Sperry Sun Drilling Services, a major petroleum industry service company, in cost-sharing an electromagnetic-based MWD system, extending its working depth, improving its reliability, and adapting it to "slimhole" systems (a lower cost drilling technique).

Nitrogen Foam Fracturing

Fracturing is essential for economic natural gas production from reservoirs that have low permeabilities -- i.e., the gas does not flow easily through the reservoir rock. Injecting nitrogen foam under high pressure into the gas reservoir can create fractures that allow the gas to move to producing wells. Until the mid-1970s, foam fracturing was limited almost exclusively to Canada and the Rocky Mountain region. DOE's research showed that the technique could be used in dense formations common in the eastern region. DOE conducted foam injection "stimulation" tests to apprise oil and gas operators of the technique's merit. Today, foam fracturing is the dominant stimulation technique for marginal gas wells in the United States.

Carbon Dioxide/Sand Fracturing for Natural Gas Production

While the nitrogen fracturing technique has made Appalachian natural gas production economic, the technique has drawbacks. Nitrogen by itself, however, isn't able to carry tiny solid particles, called proppants, that can keep the cracks open. To keep the fractures from re-sealing, operators often inject water-based foam with the nitrogen to carry sand particles into the reservoir to prop open the cracks. But water causes clay in the shales to swell, and the formation can eventually plug, reducing gas flow and often leaving recoverable natural gas behind.

DOE's Morgantown Energy Technology Center has developed an alternative that, in its initial commercial use, proved so successful that it won the distinguished *Hart Magazine's "Best Technology in the Northeast"* award. Rather than nitrogen and foam, the technique uses carbon dioxide. Carbon dioxide can crack open the formation and it is "thick" enough to transport sand particles into the fractures to hold open the ribbon-thin pathways. Because no water is used, the clays don't swell, and gas flow is boosted. It has proven 2 to 5 times more effective in boosting gas flow than conventional nitrogen-foam fracturing methods. In one of its first applications, an operator who had been able to produce only 3-9 million cubic feet of gas per well with the older technology was able to produce 18.5 million cubic feet per well with the CO_2/Sand Frac technology. Revenues of $5-$18 million were increased to $38 million because of the Federal innovation.

Horizontal/Slant Drilling for Natural Gas

"High-angle" or horizontal wells have restored new life to many aging oil reservoirs in Texas and elsewhere, but until DOE began an R&D project in western Colorado, the technique had not been tried by many western natural gas producers. In theory, drilling a slant well should significantly increase the flow of gas from a reservoir, since a wellbore moving laterally through a reservoir would likely intersect many more natural gas-carrying fractures than a traditional vertical well. But slant holes are expensive to drill and must be steered precisely thousands of feet underground to intersect the target reservoirs. The technique was considered too risky in the Piceance Basin of western Colorado until DOE began a field research project.

The DOE project showed that increases in gas production would more than offset the added drilling expenses. Barrett Resources of Denver was the first private company to respond to the results from the DOE project by drilling its own horizontal well on acreage adjoining the DOE site.

Today, four companies in the region have drilled more than a dozen wells using the slant-hole technology first demonstrated by DOE.

CO_2 Miscible Flooding for Oil Recovery

One of the most used enhanced oil recovery techniques today in the United States is CO_2 miscible flooding. Carbon dioxide is injected into aging reservoirs to force out oil that conventional production techniques cannot recover. In large part, industry gained confidence in this technology through a series of field tests conducted by private oil producers with funding from the Department of Energy and its predecessors.

CO_2 miscible flooding is now an accepted industry practice principally in West Texas and eastern New Mexico and is being extended to oil fields in Wyoming and North Dakota, principally because the Federal Government shouldered some of the initial risk in the early demonstrations of its commercial viability.

Anelastic Strain Recovery Method for Measuring Stress in Oil and Gas Reservoirs

Knowledge of in situ stress -- the geologic forces within an underground reservoir -- can help producers understand an oil or gas reservoir's characteristics, particularly as the reservoir's pressure declines over its productive life. To improve industry's ability to measure geologic stress at the depths of a typical oil or gas reservoir, Sandia National Laboratories developed a method called "anelastic strain recovery." This cost-effective, reliable method is now being offered commercial by at least two service firms and is being used by such companies as Chevron, British Petroleum Phillips, and Mobil. In recognition of the importance of this technique to industry, the method's originator, L.W. Teufel, received the Federal Laboratory Consortium's award for Excellence in Technology Transfer in 1988.

Radial Offshoot Holes for Heavy Oil Production

A basic problem for operators injecting steam in heavy oil fields is the tendency of the lighter steam to override and bypass the oil-bearing zone. An innovative way of alleviating the problem was demonstrated in an Office of Fossil Energy-sponsored test conducted in a research project with Petrolphysics. Using its Petro Jet^{TM} Ultrashort Radius Radial System, Petrolphysics significantly increased production from a heavy oil reservoir in California's Midway-Sunset field. The system avoids much of the sand plugging that has occurred in horizontal wells drilled in the same formation and has double the thermal efficiency in using steam to thin the heavy oil.

Tailored Pulse Fracturing of Oil and Gas Wells

Natural gas or oil in a reservoir may be inaccessible because the tiny fractures that allow the hydrocarbons to move through the formation may not lie in the proper orientation to provide a pathway to producing wells. DOE's research into producing gas from unconventional resources produced a technique called "tailored pulse fracturing" that provides a more controllable, omni-directional fracturing pattern. With tailored pulse fracturing, precise quantities of solid rocket fuel-like propellants are ignited in the wellbore to create a pressure "pulse." As this pulse extends from the wellbore through the surround rock, it creates fractures in a more predictable pattern. DOE's development has led to the commercialization of the technology by Petrotek Corp. of Ohio, Servo Dynamics Corp. of California, and Sunburst Recovery of Colorado. Thousands of wells from Wyoming to Texas have been stimulated using this technology.

Electric Power Generation

For most of its existence the U.S. power industry has had only a limited number of technology choices for generating electricity and reducing emissions. The pulverized coal boiler has been the most prominent means for burning coal to produce electricity. The conventional "wet scrubber" has been the traditional choice for cleaning sulfur dioxide from coal flue gases for the last 15 years. Few technological options have existed for controlling smog-causing nitrogen oxides.

Today, this situation has changed dramatically because of the Federal investment in advanced electric power generating technologies, fueled by coal and by natural gas. New power generating concepts, such as fluidized bed combustion, gasification-combined cycle, and fuel cells, are now moving over the commercial threshold. More than 20 new technologies for reducing acid rain emissions that didn't exist as commercial products 10 years ago are now available for use in the United States and worldwide because of Federal/private research, development and demonstration partnerships. Some examples are:

A Lower-Cost, "Environmentally-Beneficial" Flue Gas Scrubber

The first utility in the United States to meet new Clean Air Act standards for sulfur dioxide control did so using advanced technology from the Federal-industry cost-shared Clean Coal Technology Program. Northern Indiana Public Service Corp. installed the Pure Air scrubber, owned and operated by a joint venture involving Air Products and Chemicals Inc., at its Bailly Station near Gary, Indiana. The advanced scrubbing system reducing sulfur dioxide emissions by up to 95%. Because of several first-of-a-kind design innovations, the Pure Air scrubber cost only half as much as earlier units. Instead of the waste sludge commonly produced by older scrubbers (which causes landfill problems), it produces a commercially marketable gypsum material. In one year, the Pure Air scrubber is eliminating 50,000 tons of SO_2 emissions, turning an air pollutant into enough wallboard to construct nearly 19,000 homes. The project earned Power Magazine's 1993 *"Power Plant of the Year"* award.

The scrubber technology is now being commercially replicated in Florida to clean sulfur emissions from an oil emulsion-fueled power plant. In addition to innovative technology, the Pure Air approach is demonstrating an innovative business arrangement. Rather than selling pollution control hardware to a utility, Pure Air is contracting with a utility to clean its air emissions. This tolling arrangement could usher in the new concept of pollution control as a service industry for the utility sector.

Fluidized Bed Coal Combustors

Power Magazine, a few years ago, called the development of fluidized bed coal combustors "the commercial success story of the last decade in the power generation business." This success, perhaps the most significant advance in coal-fired boiler technology in more than half a century, has been achieved largely through research, development and demonstration sponsored by the Department of Energy and its predecessors.

The Federal Government, in cost-shared programs with the U.S. boiler industry, demonstrated the first industrial-scale atmospheric fluidized bed units, including one that is still operating 15 years later on the campus of Georgetown University. Today, every major U.S. boiler manufacturer offers an atmospheric fluidized bed system in its product line.

The technology has progressed into larger scale, utility applications due, in large part, to Federal partnership programs with industry. The Colorado-Ute Electric Association project in Nucla, CO (now operated by Tr-State Generation and Transmission Association, Inc., of Denver) was one of the early demonstrations in the Clean Coal Technology Program and is responsible for significant design improvements and commercial confidence in this state-of-the-art, low-polluting combustion system. In November 1994, Tri-State Generation and Transmission began repaying the Federal investment in the project, having produced sufficient operating revenues to trigger the recoupment provision of the Clean Coal Technology agreement.

Today, more than $6 billion in domestic sales and $2 billion in foreign sales have resulted from the U.S. public and private investment in circulating fluidized bed technology research, development and demonstration. Domestic sales alone translate into nearly a quarter of a million jobs.

The next generation of fluidized bed technology - the pressurized fluidized bed system - is now approaching commercial readiness, again due to Federal partnership programs with industry. In the Clean Coal Technology Program, American Electric Power's Tidd Plant in Brilliant, OH, - *Power Magazine's 1991 Power Plant of the Year*, now has more than 11,000 hours of operation and has established the technological basis for future commercial use of this higher-efficiency method of generating electricity from coal.

Other Clean Coal Technology Success Stories

With nitrogen oxides targeted for reduction by the 1990 Clean Air Act Amendments, three different low-NOx burner technologies are entering the commercial marketplace faster because of successful demonstration in the Clean Coal Technology Program. Low-NOx burners demonstrated in the program by Babcock & Wilcox and Foster Wheeler Inc. have now led to more than $250 million in domestic sales, supporting more than 1800 U.S. jobs. Babcock & Wilcox's low-NOx burners, in fact, were the first pollution control systems demonstrated in the Federal Clean Coal Technology Program to be sold commercially. Allegheny Power Systems purchased burners for two commercial boilers at its Hatsfield Ferry Station near Pittsburgh. Within the last two years, more than 1650 low-NOx burners, based on technology demonstrated in the Clean Coal program, have been sold.

Another pollution control technique, the AirPol Gas Suspension Absorption Technology, also has moved from the Clean Coal Technology Program into commercial use. The City of Hamilton, OH, has selected the technology to clean sulfur emissions from municipal power plant. Using the advanced technology will allow the unit to switch back to local, higher-sulfur coals, preserving jobs in Ohio coal fields while meeting strict environmental standards and saving money for ratepayers. The technology was demonstrated by AirPol, Inc., of New Jersey, at the Tennessee Valley Authority's National Center for Emissions Research in Paducah, KY. The technology is about 30% cheaper than conventional wet scrubbers and about 20% cheaper than spray drying technologies. The potential market for gas suspension absorption technology is estimated at $300 million within the next 20 years.

The Clean Coal Technology Program has also led to new advances in producing high-value fuels from the Nation's vast wealth of "low rank" coals, found predominantly in the West. The Rosebud SynCoal Project in Montana has demonstrated a way to upgrade low-quality subbituminous and lignite coals into a high heating-value, low sulfur fuel. In December 1993, Rosebud and Minnkota Power Cooperative of Grand Forks, ND, signed a letter of intent that could lead to the first commercial SynCoal plant. Minnkota plans to use the upgraded fuel to improve operations at its Milton R. Young electric generating plant near Center, ND.

Another Clean Coal Technology project, near Gillette, WY, is demonstrating a way to obtain high-quality liquid and clean-burning solid fuels from low-rank coals. It has attracted the attention of the Chinese government which signed an agreement to study the feasibility of a 5,000-ton-per-day "coal refinery" for the Shandong Province of China. The Chinese became interested in the technology during a 1993 Department of Energy-led trade mission to China.

Federal Lab-Developed Process at Core of $900 Million China Energy

Project

A new technique for cleaning potential pollutants from coal, developed by Federal scientists at the Pittsburgh Energy Technology Center, is a central component of a nearly $900 million coal preparation and slurry pipeline energy project in China. The project will bring coal from the energy-rich interior of China to the country's rapidly developing eastern and southern coastal regions. It is believed to be the first infrastructure project of its kind in China to have western financial and management control. The advanced coal cleaning technology, now being marketed by Custom Coal Inc., of Pittsburgh, is known as the "Micro-Mag" process. It is able to remove 80 percent or more of the mineral-bound sulfur in coal.

In 1994, scientists at the Pittsburgh Energy Technology Center received one of the Federal Laboratory Consortium's annual awards for excellence in technology transfer for developing and transferring the Micro-Mag technology to the private sector. The Chinese project is expected to support more than 6300 jobs in the U.S.

Summer Internship Leads to Commercial Coal Cleaning Technology

In 1980, a summer faculty appointee from Virginia Polytechnic Institute and State University began experimenting at DOE's Pittsburgh Energy Technology Center on the use of microbubbles to separate clean coal from its impurities. The initial results showed promise, and the professor subsequently won a Federal University Coal Research grant to develop the technology. Today, the summer experiment has become a commercial success story. Microbubble coal cleaning, now marketed under the name "Microcel," is used at coal preparation and minerals processing plants in 8 states in the U.S. and has been sold overseas.

The 21st Century Gas Turbine: Some Key Components are Here Today

At the heart of more than half of the new electric power generating capacity to be added in the United States in the next 20 years will be the gas-fired combustion turbine. Today, U.S. turbine manufacturers dominate the global market, selling 80% of the gas turbines purchased worldwide. Yet, foreign technology is rapidly catching up, and a new technological "leap" will be required to maintain the U.S. market lead. In 1992, DOE joined with U.S. turbine developers and a university consortium to develop a 21st century gas turbine - a turbine so advanced in efficiency and environmental performance that it would be difficult for other vendors to close the technological gap.

Today, the turbine of tomorrow is taking shape with radically new ways to cool metal blades and components, novel new materials, and innovative techniques for reducing air emissions. The program is halfway toward its goal of producing a "leapfrog" turbine system by the year 2000, but already, the R&D is paying off.

In late 1994, Westinghouse announced a new type of industrial gas turbine - the 501G - producing 230 megawatts of electricity with a 50% increase in efficiency over the company's previous machine. The turbine incorporates advanced technology from the DOE program. Closed-loop steam cooling of blades and rotors, techniques developed in the joint government-industry program, have effectively eliminated efficiency losses caused by the earlier methods of air cooling. As a result, the Westinghouse turbine is the most fuel-efficient machine in its class - but it is only a preview of what is likely to emerge from the DOE Advanced Turbine Systems Program.

The Fuel Cell: A Revolutionary Way To Generate Electricity

The electric generating industry of the 21st century likely will look much different than today's industry - both in its make-up and in the technologies it uses to generate power.
For example, because of the Federal investment in the 1980s and early 1990s, a truly revolutionary approach is today becoming available for commercial power generation - the fuel cell.

Relying on electrochemistry rather than combustion, the fuel cell will be attractive for both heavily polluted urban areas and remote applications. Not only will it emit none of the smog-causing pollutants associated with conventional power plants, it will be ideal as a distributed power source; that is, it can be sited close to the electricity user - for example, at electrical substations, or at shopping centers or apartment complexes, or in remote villages - minimizing the need for long-distance transmission lines.

The "phosphoric acid fuel cell" is the first technology to emerge from the joint public-private, cost-shared program. The U.S.-based firm International Fuel Cells, Inc. is now manufacturing a line of 200-kilowatt commercial, onsite cogeneration systems and has sold nearly 75 units throughout the world, including 31 in the United States. One of the fuel cells, operated by Southern California Gas at a Kraft Food facility in Buena Park, CA, set a record last year for uninterrupted operation. It began generating electricity and heat in June 1993, and by August of 1994, had operated continuously for 24 hours a day at more than 80 percent efficiency.

In the 1990s, the Federal-private R&D program will produce two more advanced generations of fuel cell technology: the "molten carbonate" and "solid oxide" technologies. Both are higher-efficiency, lower-cost systems that will firmly establish the United States as the global leader in fuel cell technology.

By the early part of the 21st century, annual sales of fuel cell technology could exceed $1 billion. As many as 100,000 new industry jobs could be created to manufacture and install these new, environmentally-attractive power sources.

Spinoff Applications

Spinoff applications for technologies can rarely be planned and are often the most difficult to track. Yet, spinoffs have been important success stories in the Fossil Energy program. Three of the most prominent are:

Improvements in the Artificial Heart

The flow of blood through an artificial heart may seem far removed from the flow of coal slurries through a combustor nozzle, but researchers at the DOE Pittsburgh Energy Technology Center and the

University of Pittsburgh Schools of Medicine and Engineering saw some beneficial similarities. In particular, they saw how a DOE-developed imaging device could help medical researchers understand how dangerous clots might form in and around an artificial heart pump. Using laser imaging and other advanced equipment originally developed at the Center to study the microscopic flow of coal liquids, the medical researchers were able to improve the design of the artificial heart pump - and later an artificial lung device - to minimize areas where blood stagnation could promote clotting.

Industrial Coal Furnace Technology To Be Used by Aluminum Industry

A DOE Fossil Energy program to develop an industrial coal-fired process heater has led to a new, more cost-effective way to recycle aluminum potliner. DOE's industrial research partner, the Vortec Corp., recently licensed the furnace technology to a major aluminum producer which will install it in a commercial recycling facility. The technology will be used to melt spent aluminum potliner to prepare it for recycling. The technology also has a wide range of other applications, including vitrification of low-level radioactive waste and the production of glass fibers from such sources as boiler ash, sewage sludge ash, and glass wastes.

Coal-Based Fertilizer

One of the future concepts for converting coal into other fuel forms is to apply biological processes. Certain microbes "feed" on coal, producing liquids and other substances as "waste" products. Although as a source of fuels, the technique is well into the future, it has resulted in an important near-term spinoff. The company that worked with the Department to develop a biological coal conversion process has now adapted the process to produce an organic, environmentally safe fertilizer made from coal. Sold under the tradename *Actosol*™, the fertilizer is now available from lawn care and home improvement stores.

Mr. SKAGGS. Let me also ask, if it doesn't violate any legal proscriptions that you are under, can you help us obtain essentially private industry testimonials? I mean, again, you carry the burdens of the proverbial bureaucrat looking after her own turf.

I think what will help to validate your propositions with a lot of our colleagues is clear-cut statements from coal or gas or oil companies or whatever, preferably all of the above, saying, we simply do not have the resources and the market wouldn't justify our investing the resources we do have in the following efforts, but we fully, or maybe not, support what the Department is trying to do for us as a matter of national interest and public policy.

Ms. GODLEY. Thank you, I would be glad to do that. I appreciate the invitation. The list of testimonials that I would seek would be from participants in the marketplace, both those who are partners with the department and those who are not, as well as perhaps industry-supported research consortia, who may or may not be in partnership with the Department of Energy.

Just as I read the testimony from the free marketeers who have testified before Congress, I often have thought that perhaps they live closer to the ivory tower than they did to the marketplace. And I would be glad to provide testimonials for actual market participants on this issue.

Mr. SKAGGS. That would be great.

[The information follows:]

TECHNOLOGICAL ADVANCEMENTS

The Department has available more than 280 statements from private industry, universities, and State officials describing technological advancements that would not have been made, or would not be progressing, today without Federal investment. The statements, primarily in the form of letters to the Department, are from technology developers who have been involved in the Federal research, development and demonstration (RD&D) program, and from end-users who are applying the innovations that have emerged from Federal-private RD&D partnerships. Several of the letters, from academic institutions, also describe the research and training experience provided to students as a result of their participation in Federal research projects.

The Department has assembled a 70-page compilation of excerpts from these statements, as well as appendices of the statements themselves, and has provided this material to Subcommittee Members and staff.

Some of the examples of successful technologies cited by the respondents that have been developed with cost-shared investment by the Department's Office of Fossil Energy are:

Natural Gas and Oil Technology

- the science and technology for recovering coalbed methane
- "groundbreaking work" in tight sands and gas shales technology
- advanced borehole seismic technology
- automatic casing swab technology for oil/gas wells
- horizontal drilling in tight gas sands
- gas repressuring/infill drilling technology for enhanced oil production
- slant drilling in western tight sand regions
- secondary gas detection and recovery
- electromagnetic measurement-while-drilling telemetry
- personal computer-based software for interpreting geophysical well logs
- polycrystalline diamond cutter bits
- long-radius horizontal wells
- membranes for low-quality gas upgrading and other separation applications
- remote sensing technologies
- explosive fracturing for natural gas formations
- steerable percusion air drilling technology
- advanced reservoir characterization and completion technologies
- mobility control agents for polymer flooding for enhanced oil recovery
- reservoir simulation models

Fuel Cells and Advanced Gas Turbines

- phosphoric acid fuel cell electric power/cogeneration systems, now being marketed as the 200 kW PC25 units by International Fuel Cells, Inc.
- molten carbonate and solid oxide advanced fuel cells

Coal Research, Development and Demonstration

- advanced low-NOx cell burners
- advanced coal gasification systems
- atmospheric fluidized bed technology
- circulating fluidized bed steam and power plant technology (including spinoff application for infectious hospital waste disposal)
- pressurized fluidized bed combustion systems
- the Microcel$^{(\text{TM})}$ advanced coal cleaning technology
- the Pure Air advanced flue gas desulfurization process
- flue gas conditioning agents to improve electrostatic precipitators and fabric filters (particulate collection devices for electric power plants)
- ceramic composite candle filters for hot gas cleanup
- methodologies for toxic air emission measurement
- pneumatic transport technologies for fluidized bed combustion ash storage in deep mines
- coal-based feedstocks for commercial carbon materials
- biotechnology for coal, leading to a commercial, coal-derived fertilizer
- granulated coal injection technology for steelmaking
- computer models for predicting nitrogen oxide pollutant formation
- multiple technologies for fine coal cleaning
- low-solids coal-water slurry combustion technology
- advanced slagging combustor technology and slagging combustor with internal environmental controls
- Coolside$^{(\text{TM})}$ and other duct injection pollution control technologies
- Hybrid Selective Non-Catalytic/Selective Catalytic NOx reduction technology
- coal-fired diesel engine technology
- low-rank coal combustion modifications for improved power plant efficiency
- the CQ Coal Quality Expert$^{(\text{TM})}$, expert computer software to predict power plant performance
- computer-aided optimization methods for nitrogen oxide controls
- natural gas reburning for nitrogen oxide control
- micronized coal reburning for nitrogen oxide control
- sorbent injection for sulfur dioxide control
- dry magnetic separation for coal cleaning
- combined agglomeration and magnetic separation for coal cleaning
- advanced combustion diagnostic testing procedures
- electromechanical membrane technology for pollution control, pharmaceutical manufacturing, and waste stream recovery applications
- waste/coal mixture fuels for fluidized bed combustion
- low-NOx cyclone burners
- ceramic filter components
- microbial technologies for removing organic sulfur from fossil fuels
- pulsed combustion technology for energy production and spinoff applications
- advanced dewatering technologies for coal washing plants
- technologies for high-field superconducting magnets
- high-temperature ceramics
- high-temperature heat exchangers
- liquid phase technology for methanol, diesel fuel, and fuel additive production
- the NOXSO$^{(\text{TM})}$ advanced flue gas cleaning technology
- Confined Zone Dispersion flue gas cleaning technology
- predictive models for ash formation in utility boilers
- Micromag$^{(\text{TM})}$ coal cleaning technology

- dry, micronized coal combustion in industrial boilers
- Vortec waste vitrification technology for recycling aluminum pot liners, a spinoff of advanced coal combustion technology

General and Crosscutting Fundamental Research

- fundamental process technology for thermal recovery of waste plastics
- conversion of petroleum pitch into industrially-useful carbon fibers
- improved ion exchange materials for hazardous waste cleanup

Mr. SKAGGS. I think the other thing that would be useful, again, if you could elaborate on this in the record, is the notion of both national security and economic growth and environmental externalities that in an economic sense simply don't enter into the pre-market equation that CATO or Heritage would depend upon in making or justifying their point of view on this.

A theoretical foundation would be useful for the general statements that you make; why is it that it makes any sense for us to worry about these things as a matter of public policy, rather than just letting the market do its thing.

Ms. GODLEY. The national interest issue, yes, sir.

[The information follows:]

NATURE OF FOSSIL ENERGY MARKETPLACE

Energy is not like other commodities. The typical American family spends more on energy consumption than it does each year on medical care. Reliable, affordable energy is critical to our economic health, to our industrial competitiveness, and to our national security. In turn, more effective, cleaner and lower cost technology is necessary to assure the future availability of energy, to keep it affordable, and to minimize the impact of its production and use on the quality of the environment for future generations.

This vital and integral nature of energy to our society's wellbeing is a point often ignored by those who compare it to "sporting goods" or other everyday commodities and who advocate that the private sector, based solely on free market profit incentives, will invest sufficient resources to make large leaps in innovation. In reality, that is not the case.

The utility industry remains highly regulated and, as a result, utilities have been adverse to assume full financial responsibility for high risk investments in advanced technology. Non-utility power producers are often highly leveraged and rarely have funds available to take on multi-hundred-million-dollar development and demonstration projects. The domestic oil and gas industry is increasingly comprised of smaller independents who are operating on the margin already and have little financial capability to invest in unfamiliar or unproven technologies.

As a result, the U.S. fossil energy marketplace is not a "textbook" free market. Traditional economic equations are often overshadowed by regulation, or the composition and financial capabilities of the domestic industry, or the existence of economic forces outside the U.S. (cartels, foreign government R&D incentives, etc.).

These market realities can place the U.S. at a serious disadvantage in future competition in a rapidly expanding global energy market. Other governments have recognized the huge economic benefits that can accrue from capturing an increasing share of this market, and through partnerships with their industries, are positioning their countries to take maximum advantage. Japan, for example, is spending 3 times more than the U.S. for energy-related R&D, as a percentage of Gross Domestic Product (GDP). In fact, the U.S. ranks 7th among industrialized nations in the percentage of GDP invested by the government for energy R&D.

This situation has serious ramifications for U.S. competitiveness in the economic "battleground" of the 21st century, namely the global marketplace. As Secretary O'Leary has said, "The national security danger for the 21st century is far more than bombs and weapons. It has to do with economic viability and economic dominance."

These vital national security interests aren't reflected in the traditional "free market" economic calculations. Individual companies don't assign a value to the "national good" in determining the makeup of their investment portfolios. Consequently, the "externalities" associated with U.S. economic vitality, U.S. international competitiveness, and U.S. national security must be addressed by the Federal Government in setting national energy policies, priorities and budgets.

In our FY 1996 budget, we have focused our resources on those matters of critical national importance: the preservation and enhancement of domestic oil and gas supplies, and the development of environmentally cleaner, more affordable technologies for electric power generation from coal and natural gas. These are areas where, because of the above market imperfections, the U.S. industry is not investing sufficiently to produce the most economic benefits for the American people.

Even though traditional market forces are not conducive to high-risk investments in these areas by the U.S. industry, when Government shares the risks in partnership with industry, the private sector can -- and does -- commit resources to innovative technology with longer term payoff. Therefore, private sector cost-sharing becomes a very important gauge in determining where Federal investments should be targeted. Because we have relied on cost-sharing in setting our priorities, the programs we have proposed in our budget are, in fact, "market-driven." They provide the incentive for private industry to develop innovations that would likely not be developed, or developed as quickly, if left solely to "free market" equations.

Mr. REGULA. Will you yield?

Mr. SKAGGS. Certainly.

Mr. REGULA. You are contemplating putting a value on the effect of the national security dimension?

Mr. SKAGGS. No, I don't think valuation is necessarily possible. But I think what we need to recognize is that narrow market models do not account for what may be an invaluable but inestimable national security or economic growth value that the political process inherently puts a value on with our votes. But you can't put a number on it.

Do I have any more time?

Mr. REGULA. We are going to come back around.

Mr. Skeen.

Mr. SKEEN. Thank you, Mr. Chairman.

NAVAL PETROLEUM RESERVES

Madam Secretary, I, too, want to apologize for being a little bit late. When you mentioned the Strategic Petroleum Reserves, of course, we in New Mexico have a vital interest in that. I think it started at the turn of the century, involved a scandal, the Teapot Dome scandal.

Ms. GODLEY. The Naval Petroleum Reserves.

Mr. SKEEN. Yes, the Naval Petroleum Reserves.

You want to corporatize that? That is your recommendation?

Ms. GODLEY. Yes, sir.

Mr. SKEEN. What is the function? What has been the function and what possible function does it have in the overall energy scheme? I know that you are, on the technical side of this, very much interested in it and so are we, because I think the only protection we have from oil imports or becoming vassals to some imported oil situation worldwide is the domestic production of energy, no matter whether it is oil, gas, coal, whatever. So I would like you to just give me the picture of where are we in the fine line of being in the most hazardous situation?

Ms. GODLEY. As you know, in addition to the research and development activities we undertake, we manage two different other activities. One is the Strategic Petroleum Reserve, and the second is the Naval Petroleum and Oil Shale Reserves.

Mr. SKEEN. Do they have any interplay at all?

Ms. GODLEY. No, sir.

Mr. SKEEN. Totally separate entities?

Ms. GODLEY. Yes, sir. The Naval Petroleum Reserve, as you may recall, originated, as I mentioned earlier, as a way to provide oil for the Navy when it converted its vessels. Now it is a purely commercial operation, we merely produce the oil for sale for profit on the market.

Mr SKEEN. Has it been more of a lever to control prices?

Ms. GODLEY. No, sir, it has not been used that way.

Mr. SKEEN. Well, has it been used to buy when it was low and sell it when it is high?

Ms. GODLEY. No, sir.

Mr. YATES. That is the Strategic Petroleum Reserve.

Mr. SKEEN. I know, but I am trying to get the idea in my mind, because I think most people that I know confuse the two.

Ms. GODLEY. I think that is correct.

Mr. SKEEN. That is what I want to do, get unconfused.

Ms. GODLEY. The Naval Petroleum and Oil Shale Reserves are completely separate from the Strategic Petroleum Reserve.

Mr. SKEEN. I understand that.

Ms. GODLEY. And the Naval Petroleum Reserves, the whole purpose currently under Congressional mandate is to produce oil and to sell that oil on the marketplace. That is why we want to corporatize it, put it into a more private company management structure, and then divest the Federal Government of its investment in this wholly private sector operation.

STRATEGIC PETROLEUM RESERVE

The Strategic Petroleum Reserves, on the other hand, provides our insurance against a disruption in oil imports, and we are maintaining our investment in the Strategic Petroleum Reserve and making certain that those reserves are available for use in the event of any sort of disruption in imports.

Mr. SKEEN. Has it not been the practice in the past that when oil prices were relatively low, you would replenish the supply, either the strategic or the naval reserve at that time?

Ms. GODLEY. Not to my knowledge, Congressman.

Mr. SKEEN. No wonder we are in trouble.

Ms. GODLEY. I am not certain I would agree we are in trouble. You should buy low and sell high.

Mr. SKEEN. Some years ago, there was talk about buying some reserves because oil prices were relatively low, and our domestic prices were low. Of course we are buying from domestic producers, correct?

Ms. GODLEY. No.

Mr. SKEEN. Either one or both.

Ms. GODLEY. No, no, we buy on the world market. We are no longer buying supplies. We stopped purchasing supplies to put into the Strategic Petroleum Reserve. Currently we are maintaining our current level of supplies.

ALASKAN OIL PRODUCTION

Mr. SKEEN. Thank you. I wanted to be brought up to date. What are we doing now about Alaskan production, Prudhoe Bay? Are we interested in opening that up to sales to foreign markets? Because right now it is totally dedicated to domestic processing and production, correct?

Ms. GODLEY. That is correct. The Administration is supporting the proposition that we should export Alaskan crude.

Mr. SKEEN. Why are we doing that?

Ms. GODLEY. Well, under our analysis, the primary reason is the export of Alaskan crude we believe would stimulate additional production in both Alaska and the State of California. That the use, basically, currently we are transporting Alaskan crude into the California market.

Mr. SKEEN. It is very expensive to process, the way we are doing it now; is that not correct?

Ms. GODLEY. It is more expensive, the processing.

Mr. SKEEN. It is heavy crude.

Ms. GODLEY. Yes, and it is high sulfur, that is correct.

Mr. SKEEN. And you only have one or two places that you can process that kind of crude. One is in California, most of it is on the eastern coast. So you are shipping it clear to the northeast area.

Ms. GODLEY. The principal market I believe currently is the California market.

Mr. SKEEN. You also do some refining of that crude in the Gulf States; is that not correct?

Ms. GODLEY. Yes, sir, it is.

Mr. SKEEN. But the biggest percentage of it is where?

Ms. GODLEY. I believe it is in California, but I can provide a more precise answer for you for the record.

[The information follows:]

REFINING OF ALASKAN NORTH SLOPE CRUDE OIL

In 1993, the Alaskan North Slope produced approximately 1.55 million barrels of oil per day. Of this amount, apprxomately 54 percent of this oil was refined in California and apprxoimately 29 percent was refined in the State of Wahington. Approximately 5 percent was refined in the gulf coast states. There is currently no Alaskan North Slope crude oil refined in the northeast United States.

Mr. SKEEN. We have a pipeline that goes across the Isthmus of Panama, are we moving it from one side to the other?

Ms. GODLEY. No, sir.

Mr. SKEEN. We used to.

Ms. GODLEY. I don't understand, I am not following your question.

Mr. SKEEN. We used to ship it down the West Coast from Alaska, and then transport it across the Isthmus of Panama, either by boat or by pipeline. It was picked up on the other side, taken into refineries in Texas or Louisiana, or to the Northeast.

Ms. GODLEY. You are asking for the current marketing of Alaskan crude?

Mr. SKEEN. Yes, ma'am.

Mr. SPILLER. I would be happy to address that.

Mr. SKEEN. Please, just go ahead and swing the bat.

Mr. SPILLER. My name is Reggie Spiller. The bulk of the oil that gets produced from Prudhoe Bay is in fact a light crude.

Mr. SKEEN. That is strange. I have always been told it is heavy crude.

Mr. SPILLER. There is some heavy crude there that exists in several of the fields, but when we talk about a heavy crude, we are talking any oil that is less than 24 API. Below that API would be considered to be heavy. Most of the crude that gets produced from Prudhoe Bay in Alaska actually is a lighter crude.

Now the issue is this. This lighter crude, as Assistant Secretary Godley said, is currently flooding the market in, primarily, California. The bulk of this oil goes to California. And I would say 65 to 75 percent of that oil goes to California.

Mr. SKEEN. Processed and consumed in the California market?

Mr. SPILLER. Processed and consumed. Now the remainder goes to places like the Baytown Refinery in Houston, and there may be in fact a small pipeline that moves it from one side of the Isthmus of Panama, but the majority is moved in tankers.

Mr. SKEEN. In tankers through the canal?

Mr. SPILLER. Yes, sir, and to California also. Now the real issue here is that there is a large demand for this relatively light crude in the Far East.

Mr. SKEEN. Absolutely. That is the reason I asked the question, because there is a huge market. They are very energy conscious, and they don't understand why we don't trade them some Alaskan crude.

Mr. SPILLER. Right. Now the thought process here is if we allowed our Alaska North Slope crude, which we are prohibited from exporting with the exception of 50,000 barrels to Canada, a day, if we are allowed to export that crude to primarily the Far East, the wellhead price is predicted to be raised some 50 cents to $1.50 at the wellhead.

If that would be the case, then the expectation is that there would be more demand for this light crude overseas, less of that fuel would come to California, and a greater demand for our heavy oil stocks, of which 70 percent of our heavy crude is produced in California, would happen within the State. Right now, however, there is not enough refining capacity to take advantage of this heavy crude production.

Mr. REGULA. In California?

Mr. SPILLER. In California.

Mr. SKEEN. But you also have a legal restriction——

Mr. SPILLER. Yes, sir.

Mr. SKEEN [continuing]. From shipping any of that outside the domestic market; is that not correct?

Mr. SPILLER. That is right.

Mr. SKEEN. I would like very much to know what the economic situation is. I won't ask you to do that here, because we don't have time. But I am really concerned about our national energy picture basically.

The technology that you are working on today is so vital to the situation, particularly in low production oil wells, stripper capacity, which is mostly the independent producers side of the ledger. The technology is extremely important, because the ability to enhance the recoveries has been very good and it is also still the cushion that we are using now to protect ourselves from being totally dominated from imported imports. And I hope those programs are continued.

The reason I was asking about the various oil reserves, if you want to corporatize them, if it no longer has a function, we are so imbued with the idea we are going to save all the money in the world so we can reduce the deficit, wonderful, but then I would still like to see us go back and look at the function of something before we start doing away with it.

We are so eager to jump over bluffs or off of bluffs with no parachute, and some of us lead charmed lives, but I don't think we can afford that kind of activity so far as energy is concerned. We are so vitally concerned about energy.

I appreciate the work you do, and the technology, and the spirit of cooperation that you have between the independents and the private sector. It is absolutely essential in this part of the country, our success as far as energy is concerned. I appreciate what you are doing.

Thank you. I would like to have the economics of those sales of Alaskan crude, I think, so we can make a judgment whether it accrues to our benefit or not, and whether it lessens our protection.

Ms. GODLEY. I will submit a copy of the report that goes through the economics and the impact of those exports both to you and for the record as well.

[The information follows:]

IMPACTS OF EXPORTING ALASKAN NORTH SLOPE CRUDE OIL

As reported in the Department of Energy study entitled *Exporting Alaskan North Slope Crude Oil,* June 1994, if Alaskan North Slope crude oil is exported, the value of this oil will rise along with the values of California crude oil. Higher crude oil prices would lead to better oil producer profitability, which would result in incremental production in Alaska and California—as high as 100 to 110 thousand barrels per day by the end of the decade. Increases in reserves in Alaska alone could be as large as 200 to 400 million barrels.

Resulting revenues for the Federal Government and the States of Alaska and California would increase, and by the end of 1995, the net increase in U.S. employment would be between 11,000 and 16,000 jobs.

Mr. SKEEN. Thank you very much. I appreciate it.

Thank you, Mr. Chairman.

Mr. REGULA. Thank you. And I would say to you, to the gentleman from New Mexico, we are going to have plenty of opportunity to make these tough policy decisions, both in 1995 rescissions as well as the fiscal year 1996 budget. Because your point is well taken, we have to decide whether the value received is greater than what we might get in savings.

Mr. SKEEN. I think it is important.

Mr. REGULA. It really is.

Mr. SKEEN. The Naval Petroleum Reserve is really close to New Mexico, since we lost a Secretary of the Interior who was put in prison, I think. Albert Fall and Doheney. One of them was put in prison for taking a bribe, the other one was not convicted for giving a bribe. I never could quite understand it, but since I have been watching O.J., I am about to get my law degree.

Thank you very much, I appreciate it.

Mr. SKEEN. Thank you very much. I appreciate it.

COAL RESEARCH

Mr. REGULA. I say to the subcommittee Members, I have some questions, and then we will go around again. We have time today, and I think this is a very important subject.

I noticed this weekend our balance of payments was perhaps as high as it has been, and a good part of that is about $50 billion worth of oil purchases, and you are saying in your testimony that you predict by 2010, 60 percent of our consumption will be imports. So it would seem to me that can only create an even greater problem with balance of payments.

Do you have any comment on that?

Ms. GODLEY. No, but just to concur with the feeling of urgency I have heard expressed on this panel, with the need to continue our investment in long-term benefits, both on the energy supply side, and let me emphasize as well, on the energy efficiency side.

There are two pieces of that equation: Can we produce enough supply, and then, can we reduce the amount of energy that we are using?

I think that you can see in our testimony, the kinds of technologies that the Office of Fossil Energy is investing in, addresses both of those pieces of the equation.

I would emphasize as well the importance of the budget proposed for the Office of Energy Efficiency and Renewables as well, for this very same reason.

Mr. REGULA. You mentioned in your testimony that electric power will be up 21 percent, and I think that is obvious if we are going to have the growth in our economy to create the jobs that people need, we will use more electric power.

Let me ask you first of all, would most of that increased production of electric power that we need in all likelihood be from coal in terms of generation?

Ms. GODLEY. I think in this country, as you know, Mr. Chairman, we have more coal reserves, proven reserves, than the world oil proven reserves that exist in the world in terms of oil reserves.

Mr. REGULA. In terms of Btus?

Ms. GODLEY. Correct, in terms of equivalencies. And I think coal will certainly continue to play an important role in fueling electric power generation.

Natural gas will continue, I believe, and the projection is that natural gas will continue to gain larger shares of the market as we change and continue to emphasize the need to produce clean electric power generation, although the market may not be as much in the base load generation as it will be in smaller utilization or generation of power, smaller power supplies.

Mr. REGULA. So you are saying, of this 21 percent increase that you predict, a substantial part of that could be with natural gas generation?

Ms. GODLEY. Yes, sir.

Mr. REGULA. But recognizing the need for coal, I am wondering why your coal research is targeted for a large decrease, while you use that money to increase oil and gas research.

It would seem to me that given the need for coal and given the reserves that we have, that you would want to continue substantial investment in coal research.

Ms. GODLEY. We are continuing substantial investment in coal research. I would just note that while there is a decrease in the request for new funds in the fiscal year 1996 budget, it doesn't really reflect the amount of investment that we are making in, for example, the clean coal technology program, in addition. As you know, that is advance appropriated monies that we are continuing to invest in our ongoing projects. So the new request does not reflect the new balance among the different fuel supply sources.

I will mention, also, one of the things we have started trying to accomplish beginning really with our fiscal year 1995 budget is to bring a better balanced portfolio or investment in our energy supply technologies on the one hand, and on the other hand, energy use technologies.

In our fiscal year 1994 budget, for example, about 25 percent of the budget was expended upon energy supply technologies, principally natural gas and oil. And I think that the reason for that is that we pretty well know where to find coal. The issue with coal is more how to use it.

So back, again, in fiscal year 1994, we had about a 25 percent investment of our new funds requested in the oil and gas in the supply side of the markets, and about 75 percent invested in the use side of the equation. Starting in our fiscal year 1995 budget and really carrying over with the same balance in 1996, it is more like 60/40, again, 40 percent on the exploration and production side, 60 percent on the use side.

So that is the balance we have been trying to get and that is why you see an increase, for example, in our gas and oil budgets, because these are principally on our exploration and production side or the generation of new fuel resources side as opposed to coal, where our emphasis really is on the use of coal, in principally electric power generation.

CLEAN COAL TECHNOLOGY PROGRAM

Mr. REGULA. In line with that, how successful thus far has the clean coal technology program been in terms of being available for commercialization? And as a part of that, the Secretary is in China this week; is part of the purpose of that trip to promote clean coal technology sales?

Ms. GODLEY. I think the purpose of the Secretary's trip to China is to promote energy technologies, in particular the clean energy technologies, U.S. technologies in China, as she has in other expanding markets internationally.

The clean coal program has achieved several successes. I will just mention a couple. One is some of the projects that have already—their technologies have been demonstrated and are being commercialized, have resulted in a half million dollars in sales currently and are responsible for creating 3,400 new jobs in this country.

Also, the technologies developed throughout the clean coal technology program and the underlying research and development program in the Office of Fossil Energy has contributed to over $9 billion in sales worldwide of our clean coal technologies, either as the technology themselves or components of technologies that have been marketed worldwide.

So we are already having some major commercial successes. And I might mention, as you know, Mr. Chairman, that the clean coal technology program is a little bit unique, in that as the technologies, even though they are high risk and they are demonstrated in this program, as they become commercialized, the project participants actually have a repayment obligation so the government gets its money back on those projects that are successful and commercialized. We are beginning to see the repayment of these investments coming into the U.S. Treasury now.

Mr. REGULA. I was interested, you said that Japan has the commitment of three times as much funding in energy technology research as the United States?

Ms. GODLEY. As a percentage of their GDP, yes, sir.

Mr. REGULA. So in real dollars their GDP is what, about half of the United States'?

Ms. GODLEY. I don't have that figure in my mind.

Mr. REGULA. In any event, what kind of areas are they focusing on?

Ms. GODLEY. They are focusing heavily in the power generation market as well, fuel cells, for example, is one of the technologies that they have targeted for investment.

Mr. REGULA. So they are trying to find areas that will reduce their need for fossil fuels; would that be a fair statement?

Ms. GODLEY. Yes, sir, all of the clean coal technologies, especially that we are developing, have three major goals. One is increased efficiency, reduced emissions, as well as lower cost of power generation. I think those are three motives that are behind all of the investment in those technologies.

Mr. REGULA. Mr. Yates.

Mr. YATES. Thank you, Mr. Chairman.

ADVANCED OIL AND GAS TECHNOLOGIES

I notice in your statement you say this, page 4: "Last year U.S. oil imports hit a record level, supplying more than half our domestic consumption. More than $50 billion flows out of this country annually to pay for foreign oil, up from $35 billion in 1986. If these dollars were to be invested in the U.S., they would translate into the equivalent of more than 450,000 U.S. jobs, $24 billion per year in direct and indirect wages, and more than $21 billion per year in royalties, taxes and other payments to the Federal Government and States. Moreover, we are prematurely abandoning domestic oil fields at an alarming high rate, resulting in the loss of billions of barrels of oil in the U.S. that could lead to even greater dependence on foreign sources in the future."

What do you propose to do about that? Do you propose to eliminate the OCS moratoria off our coasts or open up ANWR to development?

Ms. GODLEY. No, Mr. Congressman, I think what we plan to do about it is reflected in the budget request, particularly in the fossil budget and the energy efficiency budget. We have a number of——

Mr. YATES. May I interrupt just a moment?

Well, then, are you abandoning the development of oil in this country?

Ms. GODLEY. No, sir.

Mr. YATES. I am still not clear. I am like Mr. Skeen in the sense that I am confused by——

Mr. SKEEN. You are that confused, are you?

Mr. YATES. As Mr. Skeen? I should be so confused as Mr. Skeen. He is pretty smart.

I am trying to find out, the relationship between the statement that I quoted, and what you propose to do to stop the flow of money from this country. Are you doing it through development of other power sources? Is that what I should take your answer to be?

Ms. GODLEY. That is a piece of the answer. We are also increasing significantly our investment in technologies that will allow us to produce more oil and gas domestically than we are currently.

For example, in the advanced computational technology initiative that we have just begun in fiscal year 1995, we are trying to use or we will use the advanced technologies developed by our national laboratories with their unique core capabilities in the defense area and take those technologies developed for our national defense and apply those to finding better tools for finding and producing natural gas and oil in this country. So we have a major increase in our budget between fiscal year 1995 and 1996 to accomplish just that.

Mr. YATES. Then it is the position of the administration that the OCS moratoria off our coasts should be continued?

Ms. GODLEY. Yes, sir, currently so.

Mr. YATES. Currently so. Is that kind of wobbling a little?

Ms. GODLEY. No, sir, I think our current position is that we need to continue to develop the reserves that are without question and without challenge the reserves that we ought to be developing. I don't think that, frankly, the politics are there that would allow us to cease the moratoria or drill in ANWR, nor perhaps do we have the technologies yet that will allow us to do that in a wholly environmental benign fashion.

Mr. YATES. Then I take it from your last answer that the administration's position is not to open up ANWR for development.

Ms. GODLEY. Correct.

Mr. YATES. Thank you.

Mr. REGULA. Would you yield on that, Mr. Yates?

Mr. YATES. Sure.

Mr. REGULA. I believe that in terms of environmental impacts, the number of spills from tankers are far greater than we have had from offshore platforms in terms of volume, am I not correct?

Mr. SPILLER. That is true.

Mr. REGULA. You said that you don't think the environmental standards are stringent enough to do it safely or the potential is great enough. We are doing it in the Gulf of Mexico without problems; am I correct?

Ms. GODLEY. Actually, if I said that, that is not what I meant to say. What I believe is that we can develop better technologies that would allow us to continue to produce gas and oil in this country with less environmental impact, in fact there is a piece of the program that we are asking for new money for in fiscal year 1996 to do that.

Mr. REGULA. What is the potential of slant drilling for offshore? I saw a special in England, where BP was going out seven miles from an on-shore platform, seven miles into the North Sea. Is that technology really viable?

Mr. SPILLER. Well, I don't believe they are ticking a well from surface location to a bottom hole of seven miles. What they are probably doing is completing wells in deep water and then tying those wells back to platforms that are sitting in shallow water that is probably located seven miles from the location.

Mr. REGULA. How far can you go with a slant to produce a well?

Mr. SPILLER. The record is somewhere in the neighborhood of about three miles, about a three-mile kick. And the majority of the wells in the Gulf of Mexico are slant wells. They are drilled from single locations. They are drilled anywhere from a few degrees to 75 degrees.

Mr. REGULA. What is the record for wells off of one platform, in number?

Mr. SPILLER. I don't know. I have personally worked on platforms that had as many as 80 producing wells. I couldn't tell you how many.

Mr. REGULA. Thank you.

Mr. SKEEN. Will the gentleman yield?

Mr. YATES. I will yield.

Mr. SKEEN. Thank you, Mr. Yates.

You bring up the phrase, "environmentally acceptable" ways of producing it. Who decides that?

Ms. GODLEY. Currently we have congressional guidelines that provide——

Mr. SKEEN. Congressional guidelines?

Ms. GODLEY. Laws that pertain to environmental protection.

Mr. SKEEN. You don't have any from any other source other than congressional guidelines?

Ms. GODLEY. Those guidelines, of course, are implemented by regulations issued by the agencies empowered to do that.

Mr. SKEEN. So the agency recommends the action, Congress then codifies it?

Ms. GODLEY. I believe the reverse is true, sir.

Mr. SKEEN. That worries me if it is generated on the congressional side. You don't need to comment on that.

Mr. YATES. I was waiting for that.

Mr. SKEEN. She wasn't going to wait for the other one.

Thank you very much.

NAVAL PETROLEUM OIL RESERVES

Mr. YATES. Let's go back to the Naval reserves for a moment. You say on page 3, "We propose to privatize the Naval Petroleum and Oil Shale Reserves, which is now a purely commercial operation performing non-Federal functions. Meanwhile, we propose to manage these assets through a for-profit, government-owned corporation allowing the Reserves to be operated in a businesslike manner that would maximize their value to the U.S. taxpayer."

That sounds like a constructive approach to me. The question I should like to ask is, apparently this is just a temporary corporation you are organizing, because you are going to sell the corporation in 1997, at least you hope to.

Ms. GODLEY. Yes, it would be what I would call an interim step towards privatization. One of the things that we would expect the corporation to do is to get professionals that would assess the value of the reserves and then come up with a plan for privatizing by the end of fiscal year 1997. That would maximize the value of the reserves to the taxpayer.

That plan then would be—under our current thinking—proposed for further consideration.

Mr. YATES. All right.

Mr. REGULA. Would you yield?

You are saying corporatization is a step to a sale?

Ms. GODLEY. I don't want to say it is a step to a sale because it is my strong view that we need to take that step currently. I understand there is serious debate on whether we ought to privatize the reserves as well. That is why I feel it is important to focus on those as two separate steps.

Mr. REGULA. Are you using privatize synonymously as a sale? Wouldn't they be the same thing?

Ms. GODLEY. Yes. But the sale could occur in a number of ways. For example, it would depend, again, on the value of the advice we receive from experts in the divestiture and sale of petroleum assets.

But once the assets are corporatized in a "for-profit" federally-owned corporation, we could privatize them, for example, by an asset sale, selling of assets individually, or through outright sale of the corporation or stock in the corporation itself.

So it provides us additional flexibility in determining how we might want to privatize those assets.

Mr. YATES. You are absolutely right in saying that will encounter a great deal of debate in Congress, I am sure. But let's go back to the separate corporation you are proposing to organize.

Is that in accordance with the recommendation of the National Academy of Public Administration?

Ms. GODLEY. National Academy of Public Administration, yes, sir.

Mr. YATES. And how far advanced are you toward that?

Ms. GODLEY. We are in the process of completing for submission to Congress legislation that would allow us to do that.

Mr. YATES. Do you need legislation? According to the U.S. Department of Energy, telecommunications message says this. "The NAPA project by secretarial order established the NPOSR material and delegated to it the functions of the Secretary of Energy."

Why then do you need legislation?

Ms. GODLEY. The Academy considered several options with respect to how we could better manage the reserves than the way we are currently managing them. One way was to establish a separate entity within the Department of Energy such as you are describing. That was a different recommendation than the corporatization recommendation which would require legislation.

Mr. YATES. In the absence of legislation, are you proceeding with the Academy's recommendation?

Ms. GODLEY. The Academy's recommendation was to pursue the corporatization option which is different from the one you referred to.

Mr. YATES. Well, but I thought this was an Academy recommendation that I just read to you.

Ms. GODLEY. It was one of the three management options that was considered by the Academy as alternatives to the way we are currently operating reserves. But the Academy's ultimate recommendation was, while any one of the ones they considered would be better than the way we are operating it today, the best, most efficient and most advantageous way with respect to maximizing the value of the reserves to the taxpayer was corporatization, and I might mention the Academy did not consider whether sale or privatization in comparison to those options.

Mr. REGULA. Will you yield?

Corporatization could be a permanent solution, if I understand you correctly, and does not necessarily lead to privatization.

Ms. GODLEY. That is correct.

Mr. YATES. Which recommendation are you looking at? Number two would establish an agency within the Department of Energy comparable to the BPA, Bonneville Power Administration. The third recommendation is, by law, to establish a wholly-owned government corporation subject to provisions of the Government Corporation Control Act.

Ms. GODLEY. The latter.

Mr. YATES. The third?

Ms. GODLEY. Yes, sir.

Mr. YATES. What do you hope to gain by the government corporation?

Ms. GODLEY. I am convinced——

Mr. YATES. Are you moving that way?

Ms. GODLEY. Yes, sir.

Mr. YATES. The reason I ask that question is it seems to me it is kind of an exercise in futility if you organize it just for 1996 and you propose to sell it in 1997. I would have thought the purpose of organizing the corporation would have been for a more efficient operation of the reserves.

Ms. GODLEY. That is the primary purpose, sir.

Mr. YATES. Well, but how long are you going to have that purpose, then? Are you going to be able to do that within the limited time span that you propose for the life of this government corporation?

Ms. GODLEY. Yes, sir, I believe so. The additional advantage, even in the privatization scenario, is that currently a private sector potential purchaser cannot really value or evaluate, we believe, the potential profitability of the reserves as they are held currently and operated by the government.

We believe if we can put the reserves and operate them for some period of time as if it were a private sector company without all of the burdensome governmental requirements such as the procurement regulations and the budgeting requirements, and allow good investment plans to be developed, those private sector companies will be better able to evaluate the reserves as in a private sector function.

Mr. YATES. Does the 1996 to which you refer, refer to the calendar or fiscal year?

Ms. GODLEY. Fiscal year.

Mr. YATES. So you have got four months in which to set up this corporation, presumably.

Ms. GODLEY. We believe if we can set it up——

Mr. YATES. Six months, excuse me.

Ms. GODLEY [continuing]. And get it going by the end of the fiscal year 1996, that is what we would need to do.

Mr. YATES. Do you need any funds for that?

Ms. GODLEY. We requested some new funding for fiscal year 1996 of $101 million.

Mr. YATES. For that purpose? How much money is going toward the organization of the corporation? One hundred one million dollars?

Ms. GODLEY. Yes, sir.

Mr. YATES. The whole amount?

Ms. GODLEY. Yes, sir.

Mr. YATES. That is a lot of money to organize a corporation, isn't it?

Ms. GODLEY. It depends, however, exactly when the corporation is formed. The later in the fiscal year 1996 it is formed, the more, obviously, the more funding we would have to have.

Mr. YATES. But you haven't answered my question. That still is a lot of money—how much money do you need for the actual job of creating the corporation?

Ms. GODLEY. Oh, I am sorry. I don't have that number with me today, sir. I can provide it to you.

[The information follows:]

FUNDING TO ESTABLISH A NAVAL PETROLEUM RESERVE CORPORATION

Preliminary estimates of new, incremental administrative costs associated with the formation of the Naval Petroleum Reserve corporation indicate a range of $3.5-$5.0 million. These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A more complete analysis of start-up costs will be done in a comprehensive Business Plan for the new corporation which we expect to complete by late May, 1995.

Mr. YATES. But it is not $101 million.

Ms. GODLEY. No, sir. The $101 million would go to operate the properties of the corporation while the corporation is getting established. So that, for example——

Mr. YATES. You would have that anyway.

Ms. GODLEY. Right.

Mr. YATES. My time has expired, Mr. Chairman, even in spite of the times I yielded.

Mr. REGULA. We have got some more time here. As a follow-up, have you appeared before the authorizing committee? Because it would seem to me that to do what is being suggested in terms of corporatization is going to require some statutory changes.

Ms. GODLEY. That is correct.

Mr. REGULA. Have they requested a hearing on the authorizing committee on this subject?

Ms. GODLEY. My understanding is a hearing will be scheduled before the end of March.

Mr. REGULA. Have they expressed an interest in the authorizing committee in this approach?

Ms. GODLEY. Yes, sir.

Mr. YATES. You have got to go through the House and the Senate in less than six months?

Mr. REGULA. I yield to Mr. Yates. It is a new broom here, Mr. Yates.

Mr. YATES. I thought it wasn't sweeping there.

Mr. REGULA. Mr. Skaggs.

STRATEGIC PETROLEUM RESERVES

Mr. SKAGGS. Looking to switch to a different oil topic; The SPR. You are asking for $25.7 million for the next fiscal year. Is that strictly operating money as opposed to buying any new oil?

Ms. GODLEY. Yes, sir.

Mr. SKAGGS. Of the $136 million we appropriated for SPR this fiscal year, how much of that remains unobligated?

Ms. GODLEY. I don't have that number with me today, sir. I can provide it.

[The information follows:]

UNOBLIGATED BALANCES

The unobligated balances for the two Strategic Petroleum Reserve accounts as of February 28, 1995 were:

Strategic Petroleum Reserve Account	$140,640,896
SPR Petroleum Account	$220,265,799

Mr. SKAGGS. Mr. Chairman——

Ms. GODLEY. Excuse me just a moment.

Do you mean the unobligated carryover from fiscal year 1994 to 1995?

Mr. SKAGGS. Well, I was going to get to that too. But both numbers. And I want to have our Chairman's——

Mr. REGULA. I am sorry.

Mr. SKAGGS. I just wanted, when we have a number, for you to hear it as well, Mr. Chairman.

Ms. GODLEY. Let me be clear on your question. Could you repeat it, please?

Mr. SKAGGS. One, I would like to know what are the unobligated amounts of the $136 million we appropriated for SPR, which included I believe some acquisition monies for fiscal 1995, how much of that has not yet been obligated, and what are the unobligated carry-forward amounts from earlier fiscal years as well.

I am interested in this since we are about to do rescissions tomorrow. I am interested in when we are going to get the Chairman's mark for a rescissions bill, and would like to know whether we might have some play in this area in case some of the other rescission areas are more problematic as we go to mark up tomorrow. This is a "we need it right away" proposition.

Ms. GODLEY. I think the answer to your question is there are no unobligated monies available. In other words, we fully anticipate to use all of the monies that we have asked for.

Mr. SKAGGS. I am sure you anticipate to use the full amount, but what is not yet under contract, unobligated, you may have the budget authority, but what is unobligated that we gave you for SPR for this or prior fiscal years?

Ms. GODLEY. Any carryover from 1994 into 1995 have been spent.

Mr. SKAGGS. So they are under contract or have been actually expended?

Ms. GODLEY. Yes, sir.

Mr. SKAGGS. How about fiscal 1995 funds?

Ms. GODLEY. We are not anticipating any carryover——

Mr. SKAGGS. What have you not yet spent of the fiscal 1995 appropriation?

Ms. GODLEY. We don't have that number today, Mr. Congressman. This is our current-year monies you are talking about?

Mr. SKAGGS. Yes, but that is what we are about to do a rescission bill on.

[The information follows:]

UNOBLIGATED BALANCES FOR THE SPR PETROLEUM ACCOUNT AND THE STRATEGIC PETROLEUM RESERVE ACCOUNT

The SPR Petroleum Account had an unobligated balance of $330,105,000 at the end of fiscal year 1994. At the end of February 1995 the unobligated balance was $220,265,799. The following changes either have or are projected to occur:

$330,105,000	Unobligated Balance end of fiscal year 1994
- 90,764,000	Transferred to Strategic Petroleum Reserve Account by FY 1995 Appropriations act
- 17,000,000	Transferred to Fossil Energy Research and Development by FY 1995 Appropriations Act
- 6,774,000	Projected Obligations during FY 1995
$215,567,000	Unobligated Balance end of fiscal year 1995
-187,000,000	Proposed Transfer to the Strategic Petroleum Reserve Account during FY 1996
- 5,000,000	Proposed Obligations during FY 1996
$ 23,567,000	Unobligated Balance end of fiscal year 1996

The Strategic Petroleum Reserve Account (facilities) had an unobligated balance of $19,989,000 at the end of fiscal year 1994. At the end of February 1995 the unobligated balance was $140,640,896. The following changes either have or are projected to occur:

$ 19,989,000	Unobligated Balance end of fiscal year 1994
+ 90,764,000	Transferred from SPR Petroleum Account by FY 1995 Appropriations Act
+152,954,000	Appropriated by FY 1995 Appropriations Act
-263,707,000	Projected Obligations during FY 1995
0	Unobligated Balance end of fiscal year 1995
+312,689,000	Proposed Funding for FY 1996
-312,689,000	Proposed Obligations during FY 1996
0	Unobligated Balance end of fiscal year 1996

Mr. REGULA. If you would yield, the money that is unspent would be used for what purpose? Because there are some things that we have to do.

Mr. SKAGGS. That is why I was distinguishing between operating SPR and acquiring new reserves.

Ms. GODLEY. I am sorry, I misunderstood your question. We are no longer acquiring oil for the reserve and have not since sometime in fiscal year 1994. The entire amount of the request is anticipated, budgeted in fact, for use in operating costs certainly, but also in the movement of our Weeks Island oil, where we have a sinkhole and must move all the oil from that site, the decommissioning of that site, as well as life extension programs.

So in other words, all of what we are investing in the Strategic Petroleum Reserve currently is needed to maintain the security of the Reserve and make available its drawdown capacity.

Mr. SKAGGS. I am still confused. You are going to be able to operate with roughly $26 million to accomplish those ongoing functions; is what you are proposing for 1996?

Ms. GODLEY. Actually the operating cost is $294 million. Where we get that is with $26 million of new funding, and we have offset that with two other accounts, or existing resources that we have.

One is expending the money that is in the oil acquisition account currently, and that amount would be $187 million. And we also would propose to make up the balance to sell up to 7 million barrels of Strategic Petroleum Reserve's oil, so we do not have any extra dollars in our account.

Mr. SKAGGS. What do you believe it will cost you this year to operate SPR with those additional responsibilities that you outlined?

Ms. GODLEY. Approximately $294 million.

Mr. SKAGGS. And we have appropriated $136 million, and the rest you are getting from other accounts?

Ms. GODLEY. I am sorry. You are talking about fiscal year 1995? I gave you the wrong number. Fiscal year 1995 is a total of $227 million.

Mr. SKAGGS. And we only appropriated $136 million. So you are getting 90 from somewhere else.

Ms. GODLEY. Ninety million dollars from the SPR Petroleum Account that we are using to operate the Reserve as opposed to purchasing new oil.

Mr. SKAGGS. Now——

Mr. YATES. Will the gentleman yield?

Is this a sale of oil?

Ms. GODLEY. Not in 1995, no, sir.

Mr. SKAGGS. Your budget submission shows, as far as unobligated balances at the start of fiscal 1995, $350 million. And you anticipate unobligated balances at the beginning of fiscal 1996 of $215.5 million. How do we reconcile those numbers?

Ms. GODLEY. I know the answer to that.

Mr. SKAGGS. Great.

Ms. GODLEY. That is the SPR Petroleum Account. In other words, those are monies that have already been appropriated for use to purchase oil. We are transferring those funds to use to manage the properties and maintain the security of the properties as opposed to buying oil with it.

Mr. SKAGGS. That is the question I intended to ask you to begin with, which is, how much have we appropriated to buy oil that you haven't used to buy oil that we could conceivably treat as an unobligated balance to rescind?

Ms. GODLEY. None.

Mr. SKAGGS. You may not like it, but——

Ms. GODLEY. No, in fact, if you look at both 1995 and 1996, we are zeroing out that account in order to be able to undertake both fixing the Weeks Island project as well as our regular operations and maintenance and what we call the life extension program.

In fact, even if we zero out that account we still need more money, and rather than ask for additional funds in fiscal year 1996, we have limited that request for new funds in 1996 to $26 million.

Mr. SKAGGS. So the only way we are able to function on the $26 million for operations and maintenance of SPR, is by zeroing out the unobligated oil purchase account from prior years?

Ms. GODLEY. Yes, sir.

Mr. SKAGGS. But there is a substantial balance in that account that is unobligated as we speak today.

Ms. GODLEY. Yes, sir. If we rescind that money in 1995 we would have to increase our request for 1996.

Mr. SKAGGS. I understand. But it is important for us to have an accurate understanding of how these things measure.

Ms. GODLEY. Sorry I was slow on the uptake.

Mr. REGULA. If we did rescind, we would simply increase the 1996 amount because we have to have it to operate and maintain the SPR.

Mr. SKAGGS. It is a Peter-Paul problem.

Mr. REGULA. Exactly. It is like selling the NPR; it would make a nice balance sheet for one year.

FUSION RESEARCH

Mr. SKAGGS. Changing topics, I know this is not part of your jurisdiction, but it often helps us to understand other pieces of the department's approach to things to get personal views of witnesses. I invite your personal views as opposed to being a witness for the department on this.

What is your own sense of the money that is proposed to be put into continuing fusion research compared to the things that you care about directly in your own agencies?

Ms. GODLEY. I can legitimately claim significant or such a degree of ignorance about the subject that I do not have a personal opinion.

POWER MARKETING ADMINISTRATIONS

Mr. SKAGGS. Do you have an opinion about the proposal to sell off some of the Power Marketing Administration?

Mr. YATES. Power Marketing Administration? Which one?

Mr. SKAGGS. I forget which are identified in the budget submission for privatization. Not all of them.

Mr. YATES. Which ones——

Ms. GODLEY. Again, sir, I am not sufficiently educated about it to have a valid opinion.

EXPORT POTENTIAL FOR FOSSIL ENERGY TECHNOLOGIES

Mr. SKAGGS. And finally, going back to what I asked you about the first round, it seems to me one of the other things we ought to appreciate in determining legitimate appropriation for your R&D work is what estimates you have about export potential for some of these technologies, particularly I think of what we could do with coal technology in China, and the potential world environmental consequences of dirty coal economic growth in a country the size of China.

Mr. YATES. And fuel cells.

Mr. SKAGGS. Fuel cells as well.

[The information follows:]

GLOBAL MARKET FOR FOSSIL ENERGY POWER GENERATION TECHNOLOGIES

Studies of global markets have been done by the World Bank and the Resource Dynamics Corporation. The global market for clean coal technologies between now and 2010 is generally projected to be in the $800 billion range. In the coal power generation area alone, the projected market is over 300GW. The potential global market for gas turbines is over 500GW.

In addition, the Energy Information Administration (EIA) expects world coal consumption to increase by 32 percent between 1992 and 2010, from 5 billion to 6.6 billion short tons. Increased coal use in China alone is expected to account for about three-fifths of this projected increase. Coal use will also increase in other developing nations such as those in the Pacific Rim and South Asia.

With respect to the global environment, as global demand for coal increases, worldwide carbon dioxide emissions will do the same. If all power producers were to use the most efficient clean coal technologies, global carbon dioxide emissions could be cut by more than half, compared with the levels that would be provided by existing powerplant technologies. Extensive use of clean coal technologies in lieu of conventional coal technologies would also contribute to major reductions in emissions of SO_2, NO_x and particulates.

Also, Foster Wheeler's publication, *Heat Engineering,* discussed global markets and observed that "the latest market studies indicate that between 1992 and 2000 there will be worldwide additions of power-generation capacity totaling about 800 gigawatts—that's 800,000 megawatts. Of that 800 gigawatts, gas turbine and gas turbine combined-cycle will probably account for about 29%; fossil steam plants for about 40%, which is about 320 gigawatts; hydro 25%; and nuclear 6%. Of the approximately 320 gigawatts for fossil steam worldwide, about 30 gigawatts will be in the U.S. and the remainder will be outside of the U.S. About 160 gigawatts—will be in China. About 60% of that will be fossil steam. India is looking at 100 gigawatts; South Korea, 20 gigawatts; Taiwan, 10 gigawatts; Japan, 20 gigawatts; and Indonesia, about 40 gigawatts. On a global basis, the Far East definitely is showing the largest demand for additional power. In both China and Indonesia, fossil steam is expected to account for about 60% of the additional power. In the remaining countries, fossil steam will probably account for about 50% of the additional power. In the remaining countries, fossil steam will probably account for between 30% and 40% of their added power."

Ms. GODLEY. One of the major drivers of our investment in the power generation technologies is the potential for the export of those tech and equipment for the production of clean electricity, electric power generation. In addition to the clean coal technology program we have discussed at some length today, a couple of others are in the fuel cells area, the advanced gas turbine areas, and all of those technologies we believe will have significant potential in the international marketplace.

Mr. SKAGGS. Again, if in soliciting or gathering testimonial evidence for us from private industry, if you can, confirmation of that from an industry that would be actually conducting that business would be informative for us. I assume the Secretary is over there closing the deals on this right now, so we will——

Ms. GODLEY. I am certain she is facilitating some of the deals, definitely. But I think that these technologies are a critical part of our own energy supply portfolio in the sense that it allows us to use our reserves more efficiently.

I think the same going back to your question about fusion as well as the Power Marketing Administrations, that fusion as a potential piece of our energy supply portfolio, should be considered by people who know how to weigh both the cost of that investment and the potential benefits of that investment.

I think, again, going back to the idea that we need to make certain that we have a complete energy supply portfolio, is a key part of your question. With respect to the Power Marketing Administrations, I think as well that as we look at the clear voice, I think, of the American taxpayer and the voters that we want a smaller Federal Government, that we should consider opportunities that we can take, functions that ought not to be done by the Federal Government and put them into a different ownership function, and that is something that we should look at in addition with the Naval Petroleum Reserves and other properties like the Power Marketing Administrations.

Mr. SKAGGS. Thanks, Mr. Chairman.

COST OF DECOMMISSIONING WEEKS ISLAND

Mr. REGULA. What is the total estimated cost of decommissioning Weeks Island? I want to pursue what Mr. Skaggs is talking about here, because it seems to me that is going to be a substantial cost.

Ms. GODLEY. The exact cost is a moving target. We are still trying to assess the most cost-effective way to accomplish it. Our current estimates range from $75 million to $100 million.

Mr. REGULA. This would be paid for in part by the carryovers you have in your account, correct?

Ms. GODLEY. Yes, sir.

Ms. GODLEY. If I could amend that answer, we have a budget we have to meet with revenues in some way. I wouldn't earmark it——

Mr. REGULA. You anticipate selling some SPR oil in order to add to the unobligated balances to meet the cost of taking care of the SPR facility, am I correct?

Ms. GODLEY. Yes, sir.

Mr. REGULA. And do you have authority under the law to sell and apply those receipts from the sale of the oil? Or will this require a statutory change? Or I should say perhaps statutory authority.

Ms. GODLEY. We believe it will.

Mr. REGULA. So you will go to the appropriate authorizing committee to request that?

Ms. GODLEY. Yes, sir.

TRANSFER OF WEEKS ISLAND OIL

Mr. REGULA. How soon do you need to remove the oil on Weeks Island to avoid infiltration of, I presume, water or whatever else might be a problem as a result of the sinkhole?

Ms. GODLEY. We are taking and have been taking measures, protective measures to be certain the water intrusion does not become dangerous in any way. We anticipate we will begin moving the oil at about the end of fiscal year 1995.

Mr. REGULA. How many barrels are in Weeks Island?

Ms. GODLEY. About 72 million. Seventy-two million barrels.

Mr. REGULA. And how many barrels do you anticipate selling to meet the costs of the relocation and the maintenance of SPR in addition to what you requested in the budget?

Ms. GODLEY. Up to 7 million.

Mr. REGULA. Ten percent. So you anticipate actually lifting that and putting it into another reservoir?

Ms. GODLEY. We will move the 72 million barrels to two other sites. One in Louisiana, but most of the oil will be moved to our Big Hill site in Texas.

Mr. REGULA. Do you have capacity in both of those to take care of the oil you move?

Ms. GODLEY. Yes, sir.

Mr. REGULA. Does it require any additional capital investment to make those two reservoirs adequate to accept this oil?

Ms. GODLEY. I believe that we need to do some minor adjustments to the facilities at Big Hill. But my understanding is we do not have to make any major capital investment in order to be able to receive the oil into those storage facilities.

Mr. YATES. Mr. Chairman, how much time do they have? I don't know that I got an answer to your question. How much time do you have before the oil in Weeks Island deteriorates?

Ms. GODLEY. The oil will not deteriorate. The issue we are facing is we are having some water intrusion from the sinkhole into the reservoir.

Mr. YATES. Doesn't that deteriorate the oil?

Ms. GODLEY. No, sir. We are maintaining that Reserve and the flow of water into the reserve in a way that is not currently hurtful. We are monitoring it. The amount currently coming into the Reserve is not dangerous.

Mr. YATES. How long will that last?

Ms. GODLEY. We believe that a conservative estimate—and I would emphasize we are being very conservative in our handling of this issue—would be that we are able to continue to ready the Reserve for purposes of movement through the course of this year.

Mr. YATES. This fiscal year?

Ms. GODLEY. Yes, sir.

Mr. YATES. There is no emergency, then.

Ms. GODLEY. There is no immediate emergency, no.

SALE OF OIL FOR WEEKS ISLAND DECOMMISSIONING

Mr. REGULA. With the sale of this oil, what do you think we will lose per barrel?

Ms. GODLEY. That depends. We may not lose anything in the sense that the last oil that we purchased for the Strategic Petroleum Reserve, was purchased at an average of $17.50 a barrel.

Mr. REGULA. $17.50 is the average cost——

Ms. GODLEY. Of the last 7 million barrels that we purchased.

TIMING OF WEEKS ISLAND DECOMMISSIONING

Mr. YATES. Mr. Chairman, getting back to the answer you gave me, DOE has put out another memorandum. DOE news, no less, dated December 15th, 1994. In that you say, "Before deciding to decommission—" wait a minute, —"The panel concluded water seeping into the 550-foot deep chambers is coming from a fracture or fractures beginning at the top of the formation. Even though the water flow is relatively slow, the panel concluded long-term integrity of the chambers could be compromised."

That isn't what you told us.

"And moving the oil while the problem is manageable is the most prudent action."

Okay. That is what you are deciding to do. But it seems to me you are taking a little too much time.

"Before deciding to decommission the site, DOE examined several options to arrest the flow of the water. All were found to be either technically infeasible or effective only as short-term measures. Geologists fear that the water ultimately"—I don't know when ultimately comes into play—"ultimately could dissolve enough of the surrounding salt to cause a sudden surge of water that could force the oil into aquifers near the surface. The surrounding ecosystem, including Vermillion Bay and neighboring inlets in the Gulf of Mexico, could be in danger of being contaminated."

But your answer a few minutes ago indicates you are not worried. I would worry a great deal about that, particularly in view of the fact that you issued a press release on it.

Ms. GODLEY. We are very concerned about it and dealing with it responsibly, Congressman. I think that we have—looking at all—and preparing the reserves to be moved, it is not a matter of just starting to pump the oil out of the ground and moving it to another site. So it is not like we are not doing anything.

We are taking all of the steps we need to be taking to move the oil as quickly and as responsibly and as safely, as cost effectively as possible, and please be assured that the action that we are taking are with very deep concern about the potential of any environmental occurrence.

Mr. YATES. I am not worried about the environment, but I am more worried about the potential of oil invading the aquifers.

Ms. GODLEY. The result would be that the oil would be displaced into the surrounding areas, right.

Mr. YATES. That is drinking water for the people, isn't it?

Ms. GODLEY. Yes, but we are proceeding quickly to move the oil, we are getting prepared to move it, we are taking all of the scientifically recognized and in fact more than the work that we really need to be doing to make certain that our movement of the oil is timely, is safely done, and is done in a way that will protect the oil itself in the course of the movement.

OIL SALE AUTHORITY

Mr. YATES. Well, it would be very important for the authorizing committee to act very quickly, then, to give you the money.

Mr. REGULA. That is correct.

Mr. YATES. To give you the money that you need throughout the sale of the oil. But it sounds to me as though this is a long-term process. I don't see anything that is activating the authorizing Committee in this respect. Is the Committee going to do this for you?

Ms. GODLEY. We have legislation that will be submitted I believe in a few weeks that will do that, and we will move forward with it at that time. But I don't want to leave the impression that we are risking anything in this delay of time.

The time we are taking right now to prepare the Reserve for oil movement is work that we would have to take under any event. We are taking every step we need to be taking currently to be able to move this oil in a timely and safe way.

Mr. YATES. I have some other questions but I will wait, Mr. Chairman.

Mr. REGULA. Well, if I understand it, if you do not get authority to sell the oil and apply it to the costs of managing SPR, then you would require an additional $100 million in your budget that you would need from this subcommittee; am I correct?

Ms. GODLEY. That would be ideal, but we have looked at what would happen in the event that we not get the authorization to sell that 7 million barrels of oil.

I think that our current view is that, again, the cost actually of moving that oil is sort of a moving target. For example, we are negotiating right now, both how to move it, either shall we move it by pipeline or shall we move it by exchange, as we are pursuing work on the reservoir itself.

Mr. REGULA. Could you exchange? Is it under your present statutory authority?

Ms. GODLEY. We could exchange. The problem currently, however, is that the Cargo Preference Act would be applied for the movement of the oil, we believe, making that exorbitantly high. It would be more cost effective to move it by pipeline. That is why in the legislation we are proposing——

Mr. REGULA. Proposing to the authorizing committee?

Ms. GODLEY. Correct, would give us a one-time, single-purpose waiver of the Cargo Preference Act and Jones Act to allow us to at least have the option to exchange it and find out if that would be the most cost-effective way to do it. I would emphasize we wouldn't do it by exchange in any event currently because it is too costly, and we would move it by pipeline in any event if we didn't have a waiver of the Cargo Preference Act.

Mr. REGULA. Following up on the question of Mr. Yates, we have to mark up a bill in May of this year, we are not going to know by then what statutory authority you have, and we therefore would almost be obligated to give you enough money to do this, in addition to what you have requested. Would that be a fair assumption?

Ms. GODLEY. It would be nice to have that money. What we also are projecting, however——

Mr. REGULA. It would be more than nice. It would be necessary, wouldn't it?

Ms. GODLEY. I think not.

Mr. REGULA. Assuming you didn't get the authorization, assuming we didn't put the additional money in, how are you going to handle the problem?

Ms. GODLEY. The consequences of that would be that we would have to postpone some of our life extension program activities into fiscal year 1997. We would also not move to decommission Weeks Island.

In other words, after having moved the oil, we also need to do some environmental restoration to close down that site, and we could delay some of those activities as well in the fiscal year 1997.

We believe most of the other costs we could make up through streamlining and realigning, which is a current effort we are undertaking. In any event, we would be able to save some cost. I might add, it would be tight.

Mr. REGULA. That would not be an ideal solution, it would appear to me.

NAVAL PETROLEUM RESERVES

Mr. YATES. I want to go back to the Naval reserves. Your budget now is a caretaker budget, and I don't like that. I am concerned about that. Because I would think that a caretaker budget would be operating the reserves at a minimum. And I don't believe that that would maximize its potential valve to a purchaser, for one thing.

Secondly, I think it might result in a deterioration of some of the operations.

Thirdly, I think that it would disregard the recommendations of the General Accounting Office in its report on its examination of your operations.

I notice that your budget for 1995 is $187 million. Your base for 1996 was $187 million. Your request for 1996 was $101 million, which means that you are going to be short $86 million from your operation. That is a lot of money, isn't it?

Ms. GODLEY. Yes, sir, I would consider two scenarios, though, with that caretaker budget. Let's say we were unable to get—let's take the first. Our request is that we be able to operate as a corporation starting sometime in fiscal year 1996. If we got the authorization from Congress to do that, we believe that we could take—even if it were later on in fiscal year 1996, we could use the $101 million caretaker budget, add to it revenues that we would be able then to reinvest in the investment activities needed by those properties, and that we would realize under that scenario net revenues of $264 million in fiscal year 1996. Which is, compared to fiscal year 1995, where we are projecting $245 million net revenues.

But let me mention as well, even if we did not get authorization to corporatize the assets within fiscal year 1996, even with the caretaker budget, we would increase net revenues in fiscal year 1996 over fiscal year 1995, and fiscal year 1994.

Mr. YATES. Why wouldn't it be to your advantage—the country's advantage—to do what the GAO has recommended?

First it states, DOE could be allowed to set the rate of production in a way which maximizes profit, a standard industry practice. In contrast, the production rate of oil and gas in the reserve is currently set by statutory requirement which would have to be changed, at a rate that could be achieved without detriment to ultimate recovery, that is the MER.

But, for example, DOE has traditionally reinjected gas reserves to maximize the recovery of oil from NPR 1. And it says, "While this practice increased oil recovery, DOE, Chevron and Bechtel have estimated that selling the gas could be more profitable."

Why don't you do that? Why don't you ask the Congress to do that?

Ms. GODLEY. We could do that, and it is a good option. I think that changing——

Mr. YATES. But you are not going to do that as a caretaker, are you?

Ms. GODLEY. No, sir, but we would do more than that as a corporation. I guess the point GAO misses in its report, just allowing us to produce without an MER requirement, the maximum efficient rate of flow requirement, would increase the productivity of the wells and of our revenues from the properties, but not to the degree that the National Academy of Public Administration, for example, estimates would be done with the corporation.

So the GAO points out some, what I would call, little steps towards greater profitability that does not meet by any means the kind of greater profitability that we would achieve through corporatizing the assets.

Mr. YATES. But if you sell to a private corporation, the first thing they would do would be to take steps to sell the gasoline, the natural gas as well, wouldn't it?

Ms. GODLEY. The corporation would have the power to do that as well.

Mr. YATES. And I don't know why you don't do that in order to make it more profitable for your taxpayers.

Ms. GODLEY. It is something we should do.

Mr. REGULA. Will you yield?

Do you flare the gas now?

Ms. GODLEY. No, sir.

Mr. YATES. They reinject it into the ground. They don't sell it, which they could do. I don't understand why——

Mr. REGULA. Why don't you sell it? I guess we both have the same question.

Mr. YATES. There is a statute against it.

Ms. GODLEY. From the Naval oil reserves, we are not allowed by law to sell it. We can produce only enough to protect against offset drilling.

Mr. REGULA. Do you have any idea why that was put into the law?

Ms. GODLEY. No, sir.

Mr. REGULA. There had to be some rationale.

Mr. YATES. Do you want to ask the captain?

Ms. GODLEY. I will introduce Captain Ernest Hunter, Deputy Assistant Secretary for Naval Petroleum and Oil Shale Reserves.

Captain HUNTER. The question is why——

Mr. REGULA. What was the rationale for prohibiting the sale of the gas?

Captain HUNTER. Actually there is no prohibition against selling the natural gas, and in fact we do sell quite a bit of natural gas.

What we have to do is to make some judgments about the oil recovery enhancement that we gain from reinjecting some of the gas, but not all of it, compared to the, say, the price of the gas of the sale.

Mr. REGULA. You are saying reinjecting it helps to increase the production of oil?

Captain HUNTER. Yes, sir. At NPR 1, we could in fact sell all of the natural gas, but then we would lose the ability to use that gas to serve as a vehicle for recovery.

Mr. YATES. How much gas do you use and how much do you sell?

Captain HUNTER. I don't have those numbers off the top of my head.

Mr. YATES. But there is no statutory prohibition? There is just a statutory requirement that you—of the MER?

Captain HUNTER. Yes, sir. The MER just simply says to us that we should produce the reserves at the most efficient rate such that we do not damage the ultimate recovery of the products from the ground. And this gets to be confusing to some.

Mr. REGULA. It sure does.

Mr. YATES. Including Members of this committee.

Captain HUNTER. There is an impression by some that we are not selling the gas. But that is not true.

Mr. YATES. But, Captain, let me point out that the GAO says, the production rate of oil and gas is currently set by statutory requirement at the rate that can be achieved without detriment to the ultimate recovery of the resource, MER.

That does not stop you from selling gas?

Captain HUNTER. No, sir. It requires us to make a judgment about——

Mr. YATES. As to how much gas you use.

Captain HUNTER. Or inject in order to ensure——

Mr. YATES. So you can sell the gas.

Captain HUNTER. And we do.

Mr. YATES. Should we do away with the MER?

Captain HUNTER. We think we should now, because the original purpose was of course to prevent premature completion of reserves. The temptation is to simply pump all of the gas.

Mr. YATES. If you were a private corporation, would you use the MER as a standard for your operation?

Captain HUNTER. No, sir, but you would use something similar to that.

Mr. YATES. So this makes sense, then? A reduced MER makes sense?

Captain HUNTER. A changed MER makes sense in this environment.

Mr. YATES. Okay.

Captain HUNTER. If I may add to that, a private company, for example, would do something similar to what we do in terms of short-term production versus long term, except their focus——

Mr. REGULA. In terms of reinjecting gas?

Captain HUNTER. Yes, sir. Their focus would be on the economics of reinjecting gas based on their view of projected prices for gas. The current MER focuses on making sure that you are able to get as much of the oil out of the ground as possible.

Mr. REGULA. Will you yield?

Do you and Chevron negotiate on the techniques you are going to use in determining the sale of gas versus the reinjection?

Captain Hunter. Yes, sir.

Mr. Regula. Since they have a 21 percent ownership?

Captain Hunter. Since they have 22 percent ownership of the mineral rights, as well as 50 percent membership of the operating committee that makes those kinds of decisions.

Mr. Yates. So you do ask their opinion, then?

Captain Hunter. Oh, yes, sir. Our unit plan contract, in fact, requires us to, not just ask their opinion but give them a say in it.

Mr. Yates. By some chance, you were not with the reserves when the Arab boycott took place, were you?

Captain Hunter. No, sir.

Mr. Yates. No, you were in high school then, I think.

Captain Hunter. I am flattered.

Mr. Yates. At any rate, the news in the press was full of the fact that the big oil companies of the country, because of their connections with the Mid East suppliers, were also engaged in helping that embargo. That is my impression of what happened.

And I wonder why it doesn't make good sense in order to protect the supply of oil to the markets of this country to keep the reserves, so that if there is another Arab oil embargo from OPEC, to have that reserve, just as you had the Strategic Petroleum Reserve, which you are now doing away with actually, and relying completely upon the goodwill of the private corporations to combat such an embargo if it occurs.

Doesn't that make sense to you, Madam Secretary.

Ms. Godley. Thank you. I think that that is the issue, the appropriate use of the Naval Petroleum Reserves, is a matter that is within the Congress' jurisdiction.

Mr. Yates. It is. But you have made up your mind that you are going to be a caretaker. Therefore you are going to get rid of it. Let me point out to you, Madam Secretary, that at another hearing before this committee, the Heritage Foundation or the CATO Institute, I forget which, recommended in order to—what was the phrase you used about doing away with government?

The taxpayers of the country had voted to minimize government. In line with that, they recommended closing all public lands, or selling all public lands or turning them back to the States was the phrase they used.

Would you go along with that?

Ms. Godley. No, sir, I wouldn't.

Mr. Yates. You would not. But you are going along with selling the reserves.

Ms. Godley. Yes. Under the current purpose of those reserves, which Congress has said is to operate as the National Oil Company and producing oil and selling it on the commercial market, that function——

Mr. Yates. Where has Congress said that?

Ms. Godley. That is in the 1970's, the Congress changed the mission of the Naval Petroleum Reserves to do just that.

Mr. Yates. To do what?

Ms. Godley. To produce oil at the maximum efficient rate of flow and to sell it on the marketplace.

Mr. REGULA. So the MER is statutory.

Ms. GODLEY. Yes, sir.

Mr. YATES. And to sell the oil on the marketplace, but not the reserves.

Ms. GODLEY. Right.

Mr. YATES. Well, that is fine, I am in favor of that. I am in favor of their selling the oil because the taxpayers of the country get a profit from that operation. But you propose not only to sell the oil, you propose to sell the reserves.

Ms. GODLEY. We believe that would be the administration's position, is that would be in the best interest of—maximize the value of those reserves to the——

Mr. YATES. Well, as a good Democrat, this is one instance where I disagree with the administration.

Ms. GODLEY. And I think that the opportunity will come, that if the reserves are put on the market and there is no bidder for whatever the government says is the fair market value of that property, we won't sell it.

Mr. YATES. Well, there could be worse things, Madam Secretary, than getting a profit of $200 million or $300 million a year for the Treasury, couldn't there?

Ms. GODLEY. Yes, sir.

Mr. YATES. Yes, okay. So you agree with me.

Ms. GODLEY. I agree with you about that, definitely.

Mr. YATES. Okay. That is all I have, Mr. Chairman.

Mr. REGULA. I think if I understand the law under the MER, you are required to operate at the maximum efficient rate. But I don't think your budget will allow you to do that, because you anticipate a caretaker's status. So would you not potentially be in violation of the law?

Ms. GODLEY. I think there are various views about that. I think that—I don't have a legal position, I don't know the answer to that question.

ENVIRONMENTAL SECURITY AT OTHER SPR SITES

Mr. REGULA. Another question is on SPR, are we running an environmental risk? You mentioned Weeks Island and the potential infiltration into the aquifer. Does that potentially exist in the other reservoirs?

Ms. GODLEY. No, sir, in our view it does not. Certainly the differences between Weeks Island and the other sites is a big difference. The Weeks Island storage facility was a working salt mine which was already in existence, as opposed to the rest of the sites, which are salt caverns. The difference being that the caverns were solution-mineral and are at much lower depths and have increased pressure that secures to a much larger degree the security of the storage site.

Mr. REGULA. Well, you didn't know that Weeks Island was going to be an environmental problem, but you discovered since that it is.

Ms. GODLEY. Yes, sir.

Mr. REGULA. And would that potential exist on the others, unknown factors to you at the present time?

Ms. GODLEY. We don't believe so, sir. We have no indication of that.

AVERAGE COST OF SPR OIL

Mr. REGULA. As I understand it, the average cost totally of the oil in SPR is about $27 a barrel, is that accurate?

Ms. GODLEY. I think that is right.

Mr. REGULA. You are saying now that if you marketed 7 million barrels, you might get $14 a barrel.

Mr. YATES. That is a loss, isn't it?

Mr. REGULA. It certainly is.

Ms. GODLEY. It is. Although, again, if you consider——

Mr. REGULA. It is our fault, not theirs. We created it.

Ms. GODLEY [continuing]. Last in/first out, again, the last 7 million barrels of oil that we purchased was at an average price of $17.50 a barrel.

Mr. YATES. That is when we told them to buy it.

Mr. REGULA. Did that oil go into Weeks Island or did it go into one of the other reservoirs?

Ms. GODLEY. I don't know.

HOT AND GASSY OIL

Mr. REGULA. Have you put adequate money in here to deal with the problem of hot and gassy oil? As I recall from last year's hearings, that was something that you were contemplating spending a considerable amount of money in dealing with that problem.

Ms. GODLEY. Yes, it does. Our budget proposal includes sufficient monies to address that problem as well.

NPR SALE RATIONALE

Mr. REGULA. How do you rationalize selling NPR and keeping SPR? Here on one hand we have a reservoir of oil that is owned by the United States Government, and we have had SPR where we have purchased and put in oil, and yet we would maybe propose to sell the reservoir of oil in NPR and keep the oil in SPR. It would seem like it would make more sense to sell SPR and keep NPR.

Mr. YATES. Which is a money-maker.

Ms. GODLEY. Well, the purposes of the two are entirely different.

Mr. REGULA. I presume you can't withdraw as quickly out of NPR as you could out of SPR in the event of a crisis. Would that be the rationale?

Ms. GODLEY. That is correct.

Mr. YATES. But they have the same purpose in the event of embargoes, to protect our markets if need be.

Ms. GODLEY. That is not the current statutory mandated purpose of the Naval Petroleum and Oil Shale Reserves. It would take a——

Mr. YATES. But sometimes, you know, purposes change, and under conditions that currently exist. It seems to me that it is the better part of discretion to know that particularly in view of our dependence upon our imports, that we have to have some kind of protection. That was the reason we set up the SPR in the first place.

Ms. GODLEY. That is correct.

Mr. YATES. But the reserves can do as well for the same purpose, even though the Congress that passed that act may not have put that into the legislation.

Ms. GODLEY. It would require statutory change, yes, sir.

Mr. YATES. Oh, it wouldn't require it, I don't think so.

SPR DRAWDOWN RATE

Mr. REGULA. What is the maximum you could withdraw from SPR in, say, a six months' period? In other words, if there were a crisis, how rapidly can you withdraw from SPR to offset the market? I understand there is about a 90-day supply—or is it 70?—a 70-day supply there, assuming no other sources.

Ms. GODLEY. Right. We can draw down at a rate currently of 3.1 million barrels a day.

Mr. REGULA. Of course you couldn't even come close to that, I assume, on the NPR, so that is where you have a different function of the two.

Mr. YATES. It is already done in SPR.

Mr. REGULA. What is the maximum production per day from NPR?

Captain HUNTER. Probably about 68,000.

Mr. REGULA. And you are saying that even in a crisis period that is about all that you could get out?

Captain HUNTER. You could probably increase that some, but it would be to the detriment of——

Mr. REGULA. Of the asset.

PETROLEUM IMPORTS

One last question. I noticed in Secretary Brown's letter to the President, dated December 22nd, he said: "The Department", Commerce that is, "found that petroleum imports threatened to impair U.S. national security. I recommend that you confirm this finding." I assume the President, to respond to this challenge, would look to the Department of Energy.

What recommendations would you make to the President of things that should be done to ensure that we are not impairing U.S. security?

Ms. GODLEY. The recommendations are several. I will just list them. Increased government regulatory efficiency to make domestic oil and gas industries more competitive by lowering costs. Increased investment on energy efficiency——

Mr. REGULA. Let me stop you there. We have got a bill moving, I believe, to put a moratorium on regulations and then probably take a look at some that are on the books. Would you suggest we should be looking at some of the regulations that impair the ability to produce oil?

Ms. GODLEY. We are looking at those regulations currently, not only on the exploration and production side, but also for example on the refining business as well.

Mr. REGULA. Will you be making recommendations to the Congress of some that need to be changed?

Ms. GODLEY. The Administration—I don't know of any specific ones, to answer your question, but we are moving towards that in concert with other agencies, including EPA.

Mr. REGULA. Has the President tasked you with trying to respond to this concern for U.S. national security?

Ms. GODLEY. Yes.

Mr. REGULA. Well, I interrupted you. Go ahead with your list.

OIL AND GAS TECHNOLOGIES

Ms. GODLEY. There are many lists, and actually I am reading from a list that was included in a press release that was issued recently. But the bottom line of it, I won't read through the eight or ten specific issues, but basically the bottom line is to continue our investment in technologies that will allow us to increase our production of oil and gas and other energy supplies in this country, including renewable supplies. It would continue to invest in our energy efficiency technologies that will allow us to decrease our reliance and our need for energy supplies. And the list goes on and on.

But I think that the effort is to continue our present efforts to improve U.S. energy security rather than to adopt any specific import adjustment mechanism. That is something that has been—that every administration for many years has declined to do.

Mr. REGULA. Do you think that the budget that you have proposed has adequate funding to develop these technologies that you have just described?

Ms. GODLEY. Yes, sir.

Mr. REGULA. And have you identified many of these that you think require added funding to reach a commercialization potential? Have you identified these in your budget?

Ms. GODLEY. I am sorry, what was—I answered the question did I think our budget was sufficient.

Mr. REGULA. That is correct. And then as the follow-up on that, have you identified some of the technologies that you think will benefit from additional funding that have a high degree of potential for commercialization to accomplish the goal of greater national security?

Ms. GODLEY. Yes. I think that the principal drivers, again, behind the technologies that we are proposing to invest in and to continue to invest in are increased efficiencies, as well as less adverse environmental impact, both producing and using energy supplies in this country at affordable cost, to keep the cost of energy supplies down so we can maximize and continue to grow our economy.

And the fourth driver, as we mentioned before, is to allow U.S. companies to target international markets. principally again the electric power generation markets.

Mr. REGULA. In your factoring, do you include an expansion of nuclear energy for the purpose of producing electricity?

Ms. GODLEY. Certainly not in my budget, Congressman, and to be honest, I am not that familiar with the nuclear budget in the Department.

Mr. REGULA. Do you anticipate that coal and some additional use of natural gas would be the major source of increase for electricity production? Am I correct?

Ms. GODLEY. Yes, sir.

COAL LIQUEFACTION

Mr. REGULA. The consortium for fossil fuel liquefaction has been conducting promising research on liquefying plastic and rubber waste with coal. What are the estimates of the cost of the fuel derived from this type of process? And what is the potential for this in the future?

Ms. GODLEY. I think that my best answer would be to ask George Rudins to address that question.

Mr. RUDINS. In terms of liquefaction R&D, we brought down the cost per barrel from around $60 a barrel in the 1960s and 1970s, down to about $30, $34.

Mr. REGULA. Now, is that liquefaction solely from coal?

Mr. RUDINS. That is solely from coal. We have a goal of getting it down to about $25 a barrel in the next five or six years. Through the liquefaction consortium, there has been a general innovation associated with liquefaction—the addition of plastic and rubber feedstock as part of the coal mix. Only some preliminary work has been done, but indications are you could get another $3 to $5 reduction in the liquid price, to perhaps the $20, $25 range.

Mr. REGULA. That probably does not factor in the value to society to utilize what would normally be waste products. Is that a correct statement?

Mr. RUDINS. Well, there would be an additional benefit from taking the waste off the market, so to speak, and getting a productive fuel out of it.

Mr. REGULA. But still, unless the price of oil on the market would go up, this still would not be commercially viable, would it?

Mr. RUDINS. That is correct.

Mr. REGULA. The consortium seems to feel that they can get it down to $17 or $18 a barrel.

Mr. RUDINS. In order to get it to $17 or $18, you have to receive a credit for the waste plastic. If you assume that it is zero cost, it is around 20 some dollars. If you now are paid to take the waste you can bring the cost down to below $20 a barrel. But if there is a demand for the waste plastic, if you develop an industry, the waste owners probably would not pay you to take the waste away.

Mr. REGULA. So in effect what you are doing is developing these technologies on a standby basis so that in the event of oil price increases, then they become viable? Is that correct?

Mr. RUDINS. Yes.

Mr. REGULA. In your judgment, would the continued development of these alternatives be a factor in discouraging an OPEC from increasing prices, recognizing that if they were to do so, that it would trigger additional efforts in alternative fuels?

Ms. GODLEY. I think that that would depend on how much and how soon the technology could be brought along. I will say that we continue to believe in the validity of that technology.

Mr. REGULA. Of liquefaction we are talking about?

Ms. GODLEY. Yes, sir. And although we reduced funding significantly in that area, again so we could focus principally on the power generation technologies for all the reasons we have already talked about, we are continuing to focus the work that we are doing in direct liquefaction in our fiscal year 1996 budget on the mixing of plastic waste with coal to provide, for example, a cheap hydrogen source.

So what we are trying to do is maintain the bench scale laboratory work in this area so we don't lose the technology, and we continue to move forward with it although on a slower pace. That is commensurate with how we see oil prices proceeding in the future, at a flat level.

COGENERATION

Mr. REGULA. Last year I expressed some interest in cogeneration as a way of meeting clean air standards. Has there been much progress made on this in terms of, say, the coal burning plants adding gas with the coal to keep the emission levels on an acceptable scale?

Ms. GODLEY. Yes, that is an important part both of our Clean Coal Technology Program, as well as our Coal Research and Development Program as well.

Mr. REGULA. Well, Madam Secretary, thank you very much, and your associates, for being here today. We will have a number of questions to be answered for the record.

The Committee is adjourned.

[COMMITTEE NOTE.—Additional Committee questions and answers for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Clean Coal Technology
Overview of Budget Request

Question: How did you arrive at your estimate of $45 million in required funding to continue the Clean Coal Technology program in fiscal year 1996?

Answer: The President's Budget request for Clean Coal Technology has been amended. The amended request is $10 million. The $10 million request is the minimum amount needed to ensure that all project funding transactions scheduled for fiscal year 1996 can be financed within available funds. The request allows $18 million to finance fiscal year 1996 program direction activities in support of program implementation from funds available in FY 1996.

Question: How many of the 45 clean coal projects do you expect to be carried through to completion? Please explain.

Answer: In its May 1994 Report to Congress, DOE estimated the funds necessary to complete the 45 projects currently in the Clean Coal Technology Program. Each project was reviewed and DOE experts estimated the expected costs on a project-by-project basis. The consensus project estimates were used in a probabilistic analysis to arrive at the overall program needs. At that time it was estimated that up to $300 million would be left over after the completion of the 45 projects. This type of analysis estimates program needs but does not predict which of the projects will not go to completion. It is the nature of a first-of-a-kind demonstration program of this type that not every project will be successful. We cannot predict which of these projects will continue to completion as they are all in different stages of development and obtaining the necessary commitments for completion. As the projects evolve, we expect some of them to be discontinued.

Question: At what points are projects reviewed and who makes the decision on whether or not to proceed with a project?

Answer: Each cooperative agreement has a series of decision points at key project milestones. These are determined on a case-by-case basis during negotiation of each cooperative agreement. The period between decision points is called a budget period. Within 90 days after the beginning of each budget period (except the last), the Participant submits a Project Evaluation Plan (PEP) to DOE for approval. Upon approval, the PEP will be used by the Participant as the basis for the preparation of a Project Evaluation Report (PER). The PER must be submitted to DOE at least 60 days prior to the end of the current budget period. It is the PER that forms the basis of the Continuation Application that is evaluated by DOE for its decision whether to continue the project to the next budget period.

The recommendation by the Clean Coal Technology Program office whether to proceed to the next budget period is forwarded to the Assistant Secretary for Fossil Energy (ASFE). It is the ASFE who finally approves or disapproves the Continuation Application and the terms therein.

Question: What criteria are used to assess each project?

Answer: The Project Evaluation Report provides the basis for the decision to proceed to the next budget period. This report describes in detail the project status and explain any deviations from the project management plan, milestone schedule, and cost plan. Performance is measured against the stated objectives of the Project Evaluation Plan. If the objectives of the current budget period are satisfied, and if there is no request for additional funding (cost overrun), approval is granted to proceed into the next budget period, provided that sufficient DOE funds are available.

DOE will consider cost increases as they occur, and fund them to the extent that funds are currently available (within the limit of not more than 25 percent of the original DOE funding for the project), and to the degree that they meet the following criteria:

- Extent to which the technical and economic performance of the mature unit still (i.e., as opposed to at the time of selection) promises significant commercialization potential, including:
- Potential to be more cost effective than currently commercially available alternatives.
- Potential to offer technical and/or performance superiority that would likely lead to significant market penetration for retrofit, repowering, replacement, and new applications.

  Degree of commitment and incentive of the Industrial Participant to complete the project as originally proposed, or as modified in agreement with DOE, even if further cost growth occurs.

Question: To what extent can the government pull out of a project if it is judged to be not feasible, even if the industry cooperators may wish to proceed?

Answer: DOE's continued cost sharing of Clean Coal projects is determined by approval of Continuation Applications. The criteria for this approval is contained in Project Evaluation Reports at the beginning of each project budget period. Both DOE and the Industrial Participant agree on these criteria at the start of each budget period. At the end of each budget period, the Industrial Participant submits a Project Evaluation Report which measures project performance against these agreed upon criteria. If the Participant has made acceptable progress (i.e., DOE accepts the Project Evaluation Report) and funds are available, DOE will not unreasonably withhold approval of a continuation application. This decision making process is detailed in each cooperative agreement. As part of its efforts to attract cost sharing funds, DOE limited its decision making to this procedure.

Question: Which projects are currently awaiting decisions from the Department on proceeding to a new phase? When will those decisions be made?

Answer: Our review of the current project schedules indicates that the Clean Coal Technology Program currently has or will have a total of 6 projects pending decisions to continue to the next budget period or continuation stage by April 1995. Based on the timely receipt of the participant's request and the adequacy of the project information, decisions on Continuation Applications are normally made within a 2 week period. The 6 projects pending for continuation are as follows:

PARTICIPANT	PROJECT TITLE
(1) York County Energy Partners, L.P.	Circulating Fluidized-Bed Cogeneration Project
(2) DMEC-1 Limited Partnership	Pressurized Circulating Fluidized Bed Demonstration Project
(3) Bethlehem Steel Corporation	Blast Furnace Granulated-Coal Injection Process
(4) TAMCO Power Partners	Toms Creek IGCC Demonstration Project
(5) ABB Combustion Engineering	Combustion Engineering IGCC Repowering Project
(6) ThermoChem	Demonstration of Pulse Combustion in an Application for Steam Gasification of Coal

Question: The Committee, as an offset for the Defense supplemental, has proposed rescinding $200 million in funds available in fiscal years 1996 and 1997. What is your position on that proposal?

Answer: DOE supports the completion of the 45 projects currently in the Clean Coal Technology Program. In its May 1994 Report to Congress, DOE estimated that as much as $300 million may be available after the program is completed. The uncertainty derives from project decisions which will be made in the next several years. We believe that it is premature to reduce overall funding for the program by $200 million at this time. Based on past experience, we anticipate that not all 45 projects currently in the Program will continue to completion and, as a result, that ultimately excess funds will become available that either could be used as offsets or returned to the Treasury. We believe, however, that it is inappropriate to reduce funding now in anticipation of possible future events, since to do so risks the possibility of being forced to terminate viable projects due to lack of funds.

Question: Your budget states that you will need $485 million to fund construction activities and that an additional $80 million will be needed for operational activities in fiscal year 1996. Where will you get these funds?

Answer: The additional funds beyond the $10 million requested in this budget will come from prior year balances.

Question: Why do you need $18 million for program direction and to fund 76 FTEs at headquarters and in the field? If $18 million pays for operations with 86 FTEs in FY 1995, why isn't it less expensive in FY 1996 with 10 fewer FTEs?

Answer: The direct cost of federal workers will decrease between fiscal year 1995 and fiscal year 1996; however, federal payroll is only one component of the headquarters and field program direction activities. During fiscal year 1996, we anticipate offsetting increases in technology analytical efforts, technology transfer, and outreach activities. Fiscal year 1996 is a transition year, and we expect the program direction budget requirements to decrease significantly in subsequent years.

Question: Why are you reducing staffing in Pittsburgh by 7 FTEs while headquarters is only losing 1 FTE and Morgantown is only reduced by 2 FTEs?

Answer: The proposed staffing levels at the three locations reflect the changes occurring in the number of active projects managed at each field site, and the changing role of the headquarters organization. At Pittsburgh, a significant number of projects will have been completed during fiscal year 1995, resulting in a diminished workload in fiscal year 1996. The headquarters organization is shifting from primarily project acquisition and monitoring to technology performance assessment, technology transfer, and outreach oriented around products and markets.

Project Level Information

Question: How successful have the completed clean coal projects been with respect to having the technology adopted in the marketplace?

Answer: The program currently has 45 projects, of which 13 have successfully completed operations. The completion of technologies demonstrating environmental control systems is much further along than demonstrations addressing any other market sector, and these are technologies which have made some valuable contributions in the marketplace following successful demonstrations.

Seven NO_x control technologies covering the full range of boiler types have concluded operations. Three of these systems have been adopted for commercial application by the demonstration project host utility. Also, the first commercial sale of low-NO_x cell burners has taken place.

With regard to SO_2 control technologies, there are a number of low-capital-cost SO_2 control options for older, smaller, boilers available as a result of the program, and it seems likely there may be a significant export market for these technologies. Although the option preferred by utilities to meet Phase I of the Clean Air Act Amendments of 1990 has been fuel switching, there are a number of technology options available from the Clean Coal Technology Program to meet the more stringent Phase II SO_2 limits.

Additionally, although the program is not yet at a stage of maturity to adequately measure market realization in other market sectors (i.e., advanced electric power generation, coal processing for clean fuels, and industrial applications), two projects in advanced power generation (i.e., Nucla and Tidd) have made major achievements in advancing commercial acceptance.

Finally, one tangible measure of commercial success is repayment of DOE contributions. At this point in the program, repayment of some portion of DOE funds has already resulted from three projects: Nucla, B&W Cell Burner, and CE-Expert.

Question: Please give the Committee a few examples of how this technology is being used.

Answer: The following are a few examples of how clean coal technologies are being used in the marketplace:

- The Babcock & Wilcox Company has installed the low NO_x cell burner technology on more than 2500 MWe of capacity in the United States, with each installation achieving more than 50 percent NO_x reduction. Low NO_x cell burner retrofits have been ordered for an additional 3250 MWe.
- The Babcock & Wilcox Company has sold 85 contracts (61 domestic and 24 international) for the DRB-XCL^R low-NO_x burners demonstrated by the Public Service Company of Colorado.
- Foster Wheeler Energy Corporation has had about $20 million in sales of the low NO_x burners demonstrated on Georgia Power Company's Plant Hammond in Coosa, Georgia.
- Successful testing of the AirPol, Inc., demonstration project resulted in the City of Hamilton, Ohio, receiving a $5 million grant from the Ohio Coal Development Office to install the Gas Suspension Absorption technology for flue gas desulfurization on a 50-MWe coal-fired boiler at the City's municipal power plant.
- In April 1994, a project company of Pure Air entered into a contract to provide 1,600 MWe of SO_2 scrubbing capacity at Florida Power & Light's Manatee power plant.
- Ohio Edison Company decided to retain for commercial operation the ABB Environmental System's SNOX^{TM} system at its Niles Station as part of its Clean Air Act Amendments of 1990 compliance strategy. Also, commercial SNOX^{TM} plants have been started up in Denmark and Sicily.
- A decision was made to retain for commercial operation the flue gas recovery system for SO_2 reduction demonstrated at the Passamaquoddy Tribes 1,450 ton-per-day cement plant in Thomaston, Maine.
- As a result of the Nucla CFB Demonstration project (110 MWe),

Pyropower Corporation, the technology developer, was able to advance by 3 years a commercial line of atmospheric circulating fluidized bed units. Pyropower's follow-on commercial units are being sold under warranty in sizes up to 400 MWe.

- Use of commercial version of the Babcock & Wilcox Company's successfully demonstrated Limestone Injection Multistage Burner in an independent power production project in Canada.
- The first commercial sale of the Coal Quality Expert Acid Rain Advisor software package, demonstrated in the Coal Quality Expert Project, was made in 1993.

Question: What types of technology are currently under development in the clean coal program? How do they differ from the completed projects?

Answer: There are still some projects which utilize innovative environmental control systems in the operations phase. However, the major portion of uncompleted projects are either in advanced electric power generation systems (13 projects), coal processing for clean fuels (5 projects), or industrial applications (4 projects). Each of the three market sector applications differ from the Environmental Control Systems in that:

- A successful demonstration of advanced electric power generation systems could establish a technology base to be replicated at commercial facilities to:
  - dramatically reduce emissions of all gaseous pollutants (including air toxics and CO_2),
  - reduce by orders of magnitude the generation of solid and liquid wastes,
  - dramatically improve coal-to-power efficiency, and
  - reduce the cost of generating electricity and save taxpayers money.
- A successful demonstration of projects processing coal to produce clean fuels could establish a technology base for upgrading low-rank coals and converting them into clean, value-added fuels.
- The projects under the industrial market sector encompass the steel industry, cement industry, and industrial boiler applications. Successful operations could establish a technology base for promoting cleaner industrial operations, enhanced U.S. competitiveness in basic industries, and lower costs of production.

Differences notwithstanding, the important benefit common to all sectors is that successful demonstration may translate into exportable technology.

Question: What are the applications for these new technologies?

Answer: With respect to advanced power generation, those employing Integrated Gasification Combined Cycle (IGCC) technologies would be optimal for:

- building a new plant (greenfield)
- having to accommodate major power demand growth
- facing extremely demanding environmental requirements

With respect to advanced power generation, those employing Pressurized Fluidized Bed Combustion (PFBC) technology would be optimal for repowering because it:

- integrates readily with existing coal landing steam turbines
- is compact (can be used when space is a limitation)
- is compatible with existing power generation infrastructure

With respect to coal processing for clean fuels, in the main these will have a market application as compliance fuels for utility or industrial boilers, with or without the coproduction of coal-derived liquids for use as chemical or transportation fuel feedstocks. Other applications include use in methanol synthesis and development of computer software to optimize coal use at existing facilities.

With respect to industrial applications, these span a wide spectrum of operational improvements and include control of coke oven emissions, reduction of gaseous emissions, and conversion of solid waste to value-added fertilizer or cement feedstock. Also, the substitution of coke making in steel manufacture by a more cost effective and environmentally superior process.

Question: For the record, please provide a brief description of each of the 45 projects in the clean coal program, including information by project on current status, what remains to be done, and target completion dates.

Answer: A brief description of each of the 45 projects in the Clean Coal Technology Program, including information on current status, what remains to be done, and target completion dates is presented below:

Clean Coal Technology-I Solicitation:

Tidd PFBC Demonstration Project
Participant: The Ohio Power Company
Description: Pressurized fluidized-bed combustion combined-cycle utility repowering, 70 MWe
Location: Brilliant, OH
Total Cost: $189,886,339
DOE Share: $66,956,993
Status: Currently operating. Over 4,800 hours of coal-fired operation were achieved during 1994, bringing the cumulative total to approximately 11,000 hours.
Remaining: Testing is expected to conclude during the first quarter of 1995 and project reporting needs to be completed.
Completion: 12/95

LIMB Demonstration Project Extension and Coolside Demonstration
Participant: Babcock & Wilcox Company
Description: Extended test of limestone injection multistage burner plus demonstration of Coolside sorbent

injection, 104 MWe
Location: Lorain, OH
Total Cost: $19,404,940
DOE Share: $7,597,026
Status: Operations complete. Final report released January 1993.
Remaining: Complete
Completion: 1/93

Advanced Cyclone Combustor with Internal Sulfur, Nitrogen, and Ash Control
Participant: Coal Tech Corporation
Description: Slagging combustor and sorbent injection into combustor, 23 MMBtu/hr
Location: Williamsport, PA
Total Cost: $984,394
DOE Share: $490,122
Status: Operation complete. Final report released October 1991.
Remaining: Complete
Completion: 9/91

Enhancing the Use of Coals by Gas Reburning and Sorbent Injection
Participant: Energy & Environmental Research Corporation
Description: Gas reburning and sorbent injection retrofit into two utility boilers, 80 MWe tangentially-fired; 40 MWe cyclone-fired
Location: Springfield, IL and Hennepin, IL
Total Cost: $37,497,816
DOE Share: $18,747,816
Status: Operations complete. Evaluations and final reports in preparation.
Remaining: Complete evaluations and final reports.
Completion: 12/95

York County Energy Partners CFB Cogeneration Project
Participant: York County Energy Partners, L.P.
Description: Circulating atmospheric fluidized-bed combustion, 250 MWe
Location: West Manchester, PA
Total Cost: $379,645,450
DOE Share: $ 74,733,833
Status: In design. Agreements have been finalized with all major equipment vendors and coal suppliers. Efforts continue to complete the NEPA and state permitting process.
Remaining: Design, construction and operation.
Completion: 1/2000

Nucla CFB Demonstration Project
Participant: Tri-State Generation and Transmission Association, Inc.
Description: Circulating fluidized-bed combustion utility repowering, 110 MWe
Location: Nucla, CO
Total Cost: $54,087,000
DOE Share: $19,920,000

Status: Operation complete. Final report released May 1992.
Remaining: Complete.
Completion: 4/92

Advanced Coal Conversion Process Demonstration
Participant: Rosebud SynCoal Partnership
Description: Improve heating value and reduce sulfur content of western coal through novel coal cleaning process coupled with physical coal cleaning, 45 tons/hr
Location: Colstrip, MT
Total Cost: $105,700,000
DOE Share: $43,125,000
Status: Operations in progress.
Remaining: Complete operations and final reporting..
Completion: 11/97

Development of the Coal Quality Expert
Participant: ABB Combustion Engineering, Inc., and CQ, Inc.
Description: Coal Quality Expert Computer model to predict economic, operational and environmental benefits of using cleaned coal.
Location: Homer City, PA; Wilsonville, AL; Bayport, MN; Oologah, OK; Sumerset, MA; Grand Forks, ND; Gulfport, MI; Windsor, CT; Alliance, OH.
Total Cost: $21,746,004
DOE Share: $10,863,911
Status: All 6 planned full-scale field tests and pilot- and bench-scale correlation tests are complete. Acid Rain Advisor software is commercially available with the first commercial sale being made in 1993. A Coal Quality Expert beta version model was released in December 1994.
Remaining: The final version of the Coal Quality Expert model is expected in June 1995.
Completion: 6/95

Clean Coal Technology-II Solicitation:

PFBC Utility Demonstration Project
Participant: The Appalachian Power Company
Description: Design, construct, and operate a 340-MWe utility scale greenfield PFBC combined-cycle plant
Location: New Haven, WVa
Total Cost: $917,944,000
DOE Share: $184,800,000
Status: The participant is evaluating the results of various value engineering studies which were conducted to improve the efficiency and economic viability of the project. The utility and DOE are assessing the merits of continuing the project.
Remaining: Design, construction and operation
Completion: 2/2004

SNOX Flue Gas Cleaning Demonstration Project
Participant: ABB Combustion Engineering, Inc.
Description: SNOX technology for catalytically reducing sulfur dioxide and nitrogen oxides from flue gas.

Location: Niles, OH
Total Cost: $31,438,408
DOE Share: $15,719,200
Status: Operational testing was completed in December 1994. The system has been operated for over 7,800 hours and produced more than 5,400 tons of commercial-grade sulfuric acid. The facility has routinely operated at full capacity, achieving removal efficiencies of 1995 percent for SO_2, 94 percent for NO_x, and 99.9 percent for particulates.
Remaining: Final reporting
Completion: 3/95

SOX-NOX-ROX Box Flue Gas Cleanup Demonstration Project

Participant: The Babcock & Wilcox Company
Description: 5 MWe retrofit demonstration for combined removal of SO_2 (50 percent), NOx (90 percent), and particulates (99 percent) in a single unit.
Location: Dilles Bottom, OH
Total Cost: $13,271,621
DOE Share: $6,078,402
Status: Operation complete
Remaining: Evaluation and final report
Completion: 3/95

Demonstration of Innovative Applications of Technology for the CT-121 FGD Process

Participant: Southern Company Services, Inc.
Description: 100 MWe retrofit demonstration for 90 percent SO_2 control with and without simultaneous particulate control
Location: Newnan, GA
Total Cost: $43,074,996
DOE Share: $21,085,211
Status: Operating. During 1994, testing of high sulfur coal (2.5 percent), compliance coal (1.5 percent) and low sulfur coal (1.35 percent) were conducted. A total of 12,000 hours had been logged by the end of 1994.
Remaining: Complete operational testing and produce final report
Completion: 1/97

Advanced Flue Gas Desulfurization Demonstration Project

Participant: Pure Air, a Joint Venture Company
Description: 528 MWe retrofit of advanced flue gas desulfurization system with 90 percent SO_2 capture and 50 percent cost reduction
Location: Chesterton, IN
Total Cost: $151,707,898
DOE Share: $63,913,200
Status: Operating. The scrubber is achieving SO_2 removals in excess of 95 percent while producing a 97 percent pure commercial gypsum by-product. The demonstration has accumulated about 22,000 hours of operation with an availability of 98-99 percent and 100 percent reliability.
Remaining: Operational testing and final reporting

Completion: 9/95

Cement Kiln Flue Gas Recovery Scrubber

Participant: Passamaquoddy Tribe
Description: Scrubbing system to reduce SO_2 emissions by over 90 percent from cement kiln with 470,000 tons of cement per year
Location: Thomaston, ME
Total Cost: $17,800,000
DOE Share: $5,982,592
Status: Complete. SO_2 removal averaged 92 percent.
Remaining: Complete
Completion: 2/94

Innovative Coke Oven Gas Cleaning System for Retrofit Applications

Participant: Bethlehem Steel Corporation
Description: Demonstration of technology that removes 80 percent of sulfur-bearing compounds and 98 percent of ammonia from coke oven gases
Location: Sparrows Point, Baltimore County, MD
Total Cost: $45,239,781
DOE Share: $13,500,000
Status: Coke production at Sparrows Point was suspended in December 1991 due to rapid deterioration of the coke ovens. The coke oven gas cleanup system has been constructed and subsequently mothballed to maintain it until coke-making resumes
Remaining: Operation and reporting
Completion: On Standby

Demonstration of Advanced Combustion Techniques fora Wall-Fired Boiler

Participant: Southern Company Services, Inc.
Description: Demonstration of three advanced NO_x control technologies for retrofit applications; 500 MWe
Location: Coosa, GA
Total Cost: $14,710,909
DOE Share: $6,553,526
Status: Conducting operational testing. Long-term testing of advanced over-fire air (AOFA) and low-NO_x burners (LNB) has been completed and indicated NO_x reductions of 24 percent for AOFA, depending on load, and 48 percent for LNB at full load. Long-term testing of the combined AOFA/LNB indicated that 67 percent No_x reduction at full load is possible. The digital control system was tested and the artificial intelligence software system nearly completed.
Remaining: Complete operations and final reporting.
Completion: 4/95

Demonstration of Coal Reburning for Cyclone Boiler NOx Control

Participant: The Babcock & Wilcox Company
Description: Retrofit demonstration of coal as a reburning fuel on cyclone boilers to achieve a greater than 50 percent NO_x reduction
Location: Cassville, WI
Total Cost: $13,646,609

DOE Share: $6,340,787
Status: Complete
Remaining: Complete
Completion: 12/93

Demonstration of Selective Catalytic Reduction Technology for the Control of NO_x Emissions from High Sulfur Coal Fired Boilers

Participant: Southern Company Services, Inc.
Description: 8.7 MWe equivalent (three 2.5 MWe and six 0.2 MWe reactor plants) retrofit demonstration of technology capable of obtaining 90 percent NO_x emissions reduction
Location: Pensacola, FL
Total Cost: $23,229,729
DOE Share: $9,406,673
Status: Operational testing began in July 1993 and will be completed in July 1995. Parametric tests have indicated that all catalysts are performing within design specifications, although differences have been noted in NO_x reduction activity and other variables.
Remaining: Completion of operational testing and final reporting
Completion: 1/96

180 MWe Demonstration of Advanced Tangentially Fired Combustion Techniques for the Reduction of NO_x Emissions for Coal-Fired Boilers

Participant: Southern Company Services, Inc.
Description: Demonstration of three advanced tangentially fired combustion technologies to control NO_x in retrofit applications; 180 MWe
Location: Lynn Haven, FL
Total Cost: $9,153,383
DOE Share: $4,440,184
Status: Complete
Remaining: Complete
Completion: 6/94

Combustion Engineering IGCC Repowering Project

Participant: ABB Combustion Engineering, Inc.
Description: Pressurized, air blown, entrained-flow gasification, hot gas cleanup and gas turbine system (40 MWe) and heat recovery system (25 MWe)
Location: Springfield, IL
Total Cost: $270,700,000
DOE Share: $129,357,204
Status: Design is in progress. An independent cost estimate was completed. Results indicated that the projected cost exceeds available funds by a considerable margin. The participant and DOE are assessing project options.
Remaining: Design, construction, and operation
Completion: Completion date to be determined after reassessing project

Clean Coal Technology-III Solicitation:

10 MWe Demonstration of Gas Suspension Absorption

Participant: AirPol, Inc.
Description: Retrofit demonstration of gas suspension absorption (GSA) system capable of removal of 90 percent SO_2 in flue gas stream; 10 MWe
Location: West Paducah, KY
Total Cost: $7,717,189
DOE Share: $2,315,259
Status: Operation complete. Test results indicate that the GSA is capable of consistently maintaining 90+ percent SO_2 removal at a moderate lime requirement. The GSA has also demonstrated high availability during the test period.
Remaining: Evaluation and final report preparation
Completion: 3/95

Commercial Scale Demonstration of the Liquid-Phase Methanol Process

Participant: Air Products & Chemicals, Inc.
Description: Demonstration of liquid phase methanol process and dimethyl ether mixtures at Eastman Chemical Co. facility's TEXACO Gasifiers; 150 to 200 Tons per day of methanol
Location: Kingsport, TN
Total Cost: $213,700,000
DOE Share: $92,708,370
Status: Project definition activities were completed in September 1994 and design was initiated. Relevant environmental information for use in the NEPA process is being updated
Remaining: Complete design, construction, operation, and reporting
Completion: 12/2001

Healy Clean Coal Project

Participant: Alaska Industrial Development and Export Authority
Description: Demonstration of advanced slagging coal combustor and heat recovery in a new power plant at a capacity of 50 MWe
Location: Healy, AK
Total Cost: $242,058,000
DOE Share: $117,327,000
Status: Engineering and design are complete. A final EIS was issued. Construction is expected to begin in the spring of 1995.
Remaining: Construction, operation and final reporting
Completion: 6/2001

Full-Scale Demonstration of Low-NO_x Cell Burner Retrofit

Participant: The Babcock & Wilcox Company
Description: Retrofit demonstration of low-NO_x cell burner designed to reduce NO_x 50 percent to 60 percent at a capacity of 605 MWe
Location: Aberdeen, OH
Total Cost: $11,233,392
DOE Share: $5,442,800
Status: Operation complete. The average NO_x emissions reduction when at full load was 58 percent.

Remaining: Evaluation and final report
Completion: 3/95

Confined Zone Dispersion Flue Gas Desulfurization Demonstration

Participant: Bechtel Corporation
Description: Retrofit demonstration of confined zone dispersion process designed to remove utility flue gas sulfur at a capacity of 73.4 MWe
Location: Seward, PA
Total Cost: $10,411,600
DOE Share: $5,205,800
Status: Operation complete. The demonstration showed the technology can achieve 50 percent SO_2 removal efficiency
Remaining: Evaluation and final report
Completion: 4/95

Blast Furnace Granulated Coal Injection System

Participant: Bethlehem Steel Corporation
Description: Demonstration of advanced process for using granulated coal directly in iron making blast furnace, reducing the need for coke
Location: Burns Harbor, IN
Total Cost: $191,700,000
DOE Share: $31,259,530
Status: Construction has been completed and preoperational tests were initiated in December 1994 and will continue until May 1995. Operational testing is scheduled to begin in May 1995.
Remaining: Operations and final reporting
Completion: 1/98

Tampa Electric Company Integrated Gasification Combined-Cycle Project

Participant: Tampa Electric Company
Description: Demonstration of IGCC using oxygen-blown entrained flow gasifiers with 120 MWe hot gas clean up system and a gas turbine to lower SO_2 emissions by more than 99 percent; 260 MWe
Location: Lakeland, FL
Total Cost: $260,706,446
DOE Share: $130,353,223
Status: Project is in detailed design and early construction. An EIS was issued 8/94 and the NEPA process was completed
Remaining: Complete design, construction, operation and reporting
Completion: 10/98

PCFB Demonstration Project

Participant: DMEC-1 Limited Partnership
Description: Demonstration of a pressurized circulating fluid bed combustor inked to a combination of gas and steam turbines; 150 MWe
Location: Council Bluffs, Iowa
Total Cost: $202,959,000
DOE Share: $93,253,000
Status: Preliminary design activities are under way.

Announcement of a planned merger between Midwest Resources, Inc. and Iowa-Illinois Gas and Electric has impacted the project. An extension was granted for the participant to finalize continuation plans
Remaining: Complete design, construction, operation, and reporting
Completion: Completion date to be revised as a result of planned merger

ENCOAL Mild Coal Gasification Project
Participant: ENCOAL Corporation
Description: Demonstration of a mild gasification process to produce clean solid fuel and liquids from 1,000 tons per day of subbituminous coal
Location: near Gillette, WY
Total Cost: $90,664,000
DOE Share: $45,332,000
Status: Operations in progress. To date, the plant has completed 22 runs and logged over 5,000 hours of coal-based operation.
Remaining: Complete operations and final reporting
Completion: 9/96

Evaluation of Gas Reburning and Low-NO_x Burners on a Wall-Fired Boiler
Participant: Energy and Environmental Research Corporation
Description: Demonstration of combined gas reburning and low-NO_x burners on wall-fired utility boiler to achieve NO_x reductions of 75 percent at a capacity of 172 MWe
Location: Denver, CO
Total Cost: $17,811,172
DOE Share: $8,905,585
Status: Operations in progress. Combined gas reburning and low NO_x burners achieved NO_x reductions of 60-73 percent.
Remaining: Complete operations and final reporting
Completion: 12/95

LIFAC Sorbent Injection Desulfurization Demonstration Project
Participant: LIFAC-North America
Description: Demonstration of injecting limestone into upper regions of furnace to achieve 75 percent to 85 percent SO_2 reduction at a capacity of 60 MWe
Location: Richmond, IN
Total Cost: $21,393,772
DOE Share: $10,636,864
Status: Operational testing is complete. Long-term tests showed that SO_2 reduction above 70 percent can be maintained under normal boiler operating ranges.
Remaining: Final reporting
Completion: 3/95

Commercial Demonstration of the NOXSO SO_2/NO_x Removal Flue Gas Cleanup System
Participant: NOXSO Corporation
Description: Commercial demonstration of the NOXSO flue gas cleanup system to remove 97 percent SO_2 and 70

percent NO$_x$ at a 144 MWe capacity
Location: Newburgh, IN
Total Cost: $67,181,325
DOE Share: $33,506,012
Status: Design in progress for a recently selected new site
Remaining: Complete design, construction, operation and reporting
Completion: 4/99

Integrated Dry NO$_x$/SO$_2$ Emissions Control System
Participant: Public Service Company of Colorado
Description: Demonstration of low NO$_x$ burners, overfire air port, urea injection and calcium and sodium sorbent injection to reduce NO$_x$ and SO$_2$ emissions by 70 percent at a capacity of 100 MWe
Location: Denver, CO
Total Cost: $27,411,462
DOE Share: $13,705,731
Status: Operations in progress. When used with low-NO$_x$ burners, urea-based selective non-catalytic reduction increased total system No$_x$ reduction to greater than 80 percent at full load (110 MWe). Long-term testing has demonstrated SO$_2$ removal efficiency near 70 percent using sodium bicarbonate. Particulate removal was over 99.96 percent.
Remaining: Complete operation and final reporting
Completion: 11/95

Clean Coal Technology-IV Solicitation:

Toms Creek IGCC Demonstration Project
Participant: TAMCO Power Partners
Description: 55 MW demonstration of a pressurized, air-blown IGCC at a new power plant using the IGT U-Gas fluidized-bed gasification system with improved coal-to-power efficiency and reduced cost
Location: Existing coal mine in Wise County, Coeburn, VA
Total Cost: $196,570,000
DOE Share: $95,000,000
Status: Looking for site
Remaining: Detailed design, construction, and operation
Completion: Schedule uncertain

Piñon Pine IGCC Power Project
Participant: Sierra Pacific Power Company
Description: 80 MW demonstration of an IGCC at a new power plant facility utilizing the KRW air-blown fluidized bed and hot gas cleanup system with low sulfur western coal
Location: Reno, NV
Total Cost: $308,551,000
DOE Share: $154,275,500
Status: Just started construction
Remaining: Complete construction and operation
Completion: 7/2000

Wabash River Coal Gasification Repowering Project
Participant: Wabash River Coal Gasification Repowering Project Joint Venture
Description: Commercial scale repowering demonstration of one of six units of a 265 MW (net) IGCC power plant using Destec's two-stage, entrained-flow gasification system with high-sulfur eastern bituminous coal
Location: West Terre Haute, IN
Total Cost: $438,200,000
DOE Share: $219,100,000
Status: Construction 75 percent complete
Remaining: Complete construction and operation
Completion: 9/98

Self-Scrubbing Coal: An Integrated Approach to Clean Air
Participant: Custom Coals International
Description: 500 tph demonstration to provide all of the necessary data to support near-term erection of a 750-1000 tph plant producing utility fuel emitting less than 1.2 lb SO$_2$/MMBtu, based on the integration of advanced physical coal cleaning
Location: Laurel Site near Central City in Somerset County, PA
Total Cost: $89,715,781
DOE Share: $38,038,656
Status: Construction nearing completion
Remaining: Startup and operation
Completion: 3/96

Milliken Clean Coal Technology Demonstration Project
Participant: New York State Electric & Gas Corporation
Description: Demonstration of a combination of the S-H-U FGD process and the NOxOUT injection system providing marketable byproducts, zero waste water discharge, and 98 percent SO$_2$ removal while burning a high sulfur coal.
Location: Lansing, NY
Total Cost: $158,607,807
DOE Share: $45,000,000
Status: Shakedown
Remaining: Operation
Completion: 8/98

Micronized Coal Reburning Demonstration for NO$_x$ Control on a 175 MWe Wall-fired Unit
Participant: Tennessee Valley Authority
Description: 175 MWe retrofit demonstration of coal reburning for a pulverized coal, wall-fired unit with a 50 to 60 percent reduction in NO$_x$ emissions using the current fuel source.
Location: West Paducah, KY
Total Cost: $7,330,041
DOE Share: $3,514,755
Status: Looking for host site
Remaining: Detailed design, construction, and operation
Completion: Schedule uncertain

Demonstration of Pulse Combustion in an Application for Steam Gasification of Coal

Participant: ThermoChem, Inc.
Description: Demonstration of a novel coal gasification unit producing a clean medium-Btu fuel and char for use in a direct reduced iron process.
Location: Silver Bay, MN
Total Cost: $37,333,474
DOE Share: $18,666,737
Status: Complete design and NEPA for new site
Remaining: Detailed design, construction, and operation
Completion: 6/98

Clean Coal Technology-V Solicitation:

Warren Station EFCC Demonstration Project

Participant: Pennsylvania Electric Company
Description: 62 MW repowering demonstration of an existing steam plant to form a combined cycle system consisting of an externally-fueled gas turbine utilizing a ceramic heat exchanger, eliminating the need for hot gas cleanup.
Location: Warren, PA
Total Cost: $146,832,000
DOE Share: $73,416,000
Status: In preliminary design phase, NEPA activities underway
Remaining: Complete design, construction, and operation
Completion: 3/2000

Coal Diesel Combined-Cycle Project

Participant: Arthur D. Little,Inc.
Description: 14 MW demonstration of a modular coal-water slurry diesel engine to be operated as a combined cycle system utilizing engine exhausts in a heat recovery boiler.
Location: Easton, MD
Total Cost: $38,309,516
DOE Share: $19,154,758
Status: In preliminary design phase, NEPA activities underway
Remaining: complete design, construction, and operation
Completion: 2/2001

Clean Energy Demonstration Project

Participant: Clean Energy Partners, L.P.
Description: 477 MW demonstration of an integrated gasification combined cycle system utilizing a small portion of the coal gas to demonstrate a 1.25 MW carbonate fuel cell.
Location: Project site uncertain
Total Cost: $841,096,189
DOE Share: $183,300,000
Status: Looking for host site
Remaining: Design, construction, and operation
Completion: Schedule uncertain

Four Rivers Energy Modernization Project

Participant: Four Rivers Energy Partners, L.P.
Description: 95 MW demonstration of a second generation pressurized circulating fluidized bed power plant utilizing a topping combustor and advanced hot gas cleanup system.
Location: Calvert City, KY
Total Cost: $360,707,500
DOE Share: $142,460,000
Status: In design
Remaining: Complete detailed design, construction, and operation
Completion: 3/2001

Clean Power From Integrated Coal/Ore Reduction (COREX)-CPICOR

Participant: Centerior Energy Corporation
Description: Commercial demonstration of an Integrated Coal/Ore Reduction (COREX)-CPICOR process producing 1.2 tons/year hot metal and 181 MW from a combined cycle power system.
Location: Vineyard, UT
Total Cost: $825,092,000
DOE Share: $149,482,242
Status: In negotiation
Remaining: Award, design, construction, and operation
Completion: Schedule uncertain

Potential Excess Funds

Question: When will you have a better estimate of just how much funding you will need to complete the clean coal program and in what year those funds will be needed?

Answer: A number of critical project decisions are scheduled over the next six months that will provide at least a partial answer to this question. However, many major project decision points will not occur until fiscal years 1996 and 1997.

Question: The Committee will be preparing to markup the fiscal year 1996 bill in May. Can we expect a more definitive answer by that time?

Answer: We will provide the Committee with the latest information we have available at the time of markup. Several major projects are currently scheduled for key decisions within this period, and the outcome of these decisions could significantly effect program funding requirements. The analysis in last May's Report to Congress will be updated at that time.

ADDITIONAL COMMITTEE QUESTIONS

Fossil Energy Research and Development
Overview of Budget Request

Question: The Committee expects to have a lower budget allocation in fiscal year 1996 than in fiscal year 1995. What would you cut if you had to reduce this budget request by 10%? Please provide details for the record.

Answer: The President recently amended the FY 1996 Clean Coal Technology request, reducing it from $45 million to $10 million. Our FY 1996 budget request reflects a balanced portfolio. It increases its emphasis in the exploration and development of domestic natural gas and oil resources while maintaining the pace of development for key advanced electric power generation for both natural gas and coal. Both of these thrusts address critical national needs. The Federal role in both areas is particularly important given the current make-up of the domestic petroleum industry and the risk-adverse regulatory environment that still dominates the electric power industry.

I cannot list projects in the Fossil Energy budget that are of lowest priority, principally because the projects within our portfolio are not easily compared on an "apples-to-apples" basis. For example, some projects are limited efforts, intended to keep alive the technological base of alternative energy approaches in the event national or economic security measures dictate their use in the future. Others offer critical enabling technologies that support our mainline programs and may be necessary to ensure that industry ultimately accepts the new concepts. Still others perform specific cross-cutting functions, such as risk-based regulatory analysis and streamlining and data gathering, that are necessary to make informed policy decisions but would not be done, either consistently throughout various States or at all, if the Federal Government did not play a coordinating role.

We have fashioned the FY 1996 Fossil Energy budget with such a balance in mind -- placing our highest priority on technologies of strategic national significance that will not be pursued by industry alone, while at the same time, ensuring that we maintain support for other activities that are in the national interest.

If the intent is to carry out a budget-cutting exercise, our preference would be to allocate the reductions in a way that attempts to maintain balance within our R&D portfolio. It may be less harmful, therefore, to apply a reduction in the budgets of several projects, rather than targeting entire programs for elimination.

Question: It is possible that the Committee may not agree with the distribution of funds you have proposed. If the Committee were to recommend restoring some of the reductions to the coal research budget, what would be your top 10 priorities and what would each of them cost?

Answer: Our budget request accomplishes an important balance between federal investment in the development of our domestic fossil fuels and the use of fossil fuels. In our Fiscal Year 1994 budget, only about 25% of the budget was directed to the development of our fossil fuels resources (for example, coal preparation and processing activities and natural gas and oil exploration and production activities), and 75% of the budget was directed to the development of the use of fossil fuels (for example, in the generation of electric power from coal and natural gas and industrial uses of coal). Principally because of our increased reliance on imported oil, which reached an all-time high of 50% of our total oil use in 1994, we have placed a higher priority on activities that will allow us to increase our domestic fossil fuel resource base. As a result, our Fiscal Year 1996 budget is better balanced, with about 40% of the budget directed to the development of domestic fossil fuel resources and 60% directed to use of fossil fuels.

The budget as proposed also balances investment among fuel sources within the development and use activities in the budget. Within the development portion of our portfolio, we have increased our emphasis on exploration and production for natural gas and oil. New technology can play a very important role in expanding the economic production of gas and oil resources. There is no equivalent funding for coal-related supply development because we know where the Nation's coal supplies can be found and we understand the technologies for producing them.

In contrast, the activities in the use of fossil fuels are more heavily weighted toward coal, again because this is where the principal technical challenges lie. Also, we have made a substantial investment in the last decade in the cost-shared demonstration of clean coal technologies that is not directly reflected in the FY 1996 request for new budget authority.

For these reasons, we believe strongly that the budget as proposed reflects an appropriate balance of priorities, and provides for adequate funding of those priorities. To achieve that balance, we have had to reduce some programs. We have been able to maintain our program to develop a low-emission boiler system by proposing to reduce the current three contractors to one.

We have also reduced significantly our funding for coal liquid fuels research and development. This program was determined to be lower priority than power generation research and development because of the expected continuation of relatively low world oil prices.

Coal Preparation

Question: Why do you propose to eliminate all funding for high efficiency process development efforts in fiscal year 1996?

Answer: Prior years appropriations are sufficient to fully fund eight or nine of the ten projects selected under the two solicitations (HEP I and HEP II) run under the High Efficiency area. This research involves technologies that are near commercialization. Given the need for reducing federal expenditures, it is appropriate that industry fund any additional high efficiency coal preparation research.

Question: What specific projects will be affected by this proposal, and why do you believe they are no longer needed?

Answer: The following three HEP II projects are in the contract negotiation phase and would be reduced in scale or eliminated to conform with available funds:

- o Control Int. Inc.: This project will demonstrate flotation cleaning process control using a video based optical analyzer.
- o Alberta Research Council: Two to three tph scale demonstration of oil agglomeration as a technique to recover coal fines at a conventional coal preparation plant.
- o VPI: Demonstration at 500 pph scale triboelectrostatic coal cleaning.

Question: Explain the proposed reduction in bench-scale research on advanced physical and chemical coal cleaning concepts.

Answer: The reduced Coal Preparation in-house funding reflects the completion of the last of the three high efficiency projects conducted in the Pittsburgh Energy Technology Center, Coal Preparation Process Research Facility (CCPRF).

Direct Liquefaction

Question: Bench scale research on advanced liquefaction is being reduced from $2,753,000 in fiscal year 1995 to $1,500,000 in fiscal year 1996. What are you eliminating and what are you keeping?

Answer: The purpose of bench-scale research is to develop promising concepts for the next generation of advanced liquefaction processes with potential to reduce the cost of coal derived transportation fuels. As part of this activity, selection was to be made for the second phase, bench scale study of two promising concepts. The first phase included laboratory and exploratory work required to obtain the data to specify and show the potential among several competing concepts. With the reduced funding only one second phase project selection will be made. In addition, a bench scale study with Exxon employing their existing unit for study of improved two stage liquefaction concept using slurry catalysts would be continued at a lower level of activity.

Question: Why has liquefaction become a low priority in your budget?

Answer: Direct Coal Liquefaction is a potentially important long-term option for producing liquid transportation fuels from coal. However, the Energy Information Agency's Annual Energy Outlook for 1995 projects that oil prices will rise more slowly than previously projected, to slightly more than $24 per barrel in 2010, therefore delaying commercial prospects for this technology. The objective of the Coal Liquefaction Program remains the development of technology competitive with oil at $25 per barrel. Consistent with the long-term nature of the market opportunity, the process improvements required to achieve this goal can be developed and confirmed with the bench and laboratory scale activities supported in the FY 1996 budget request.

Question: What laboratory and exploratory research on innovative process concepts will you be stopping by reducing funding in this area from $2,750,000 in fiscal year 1995 to $2,000,000 in fiscal year 1996? Please explain.

Answer: The purpose of the laboratory and exploratory research on innovative concepts is to provide the technical data base for developing promising advanced liquefaction concepts with potential to reduce the cost of coal-derived transportation fuels to $25 per barrel crude oil equivalent. This research activity including PETC in-house co-liquefaction of coal and wastes (plastics, waste oil) and the Sandia National Laboratory advanced catalyst study will be reduced by $750,000 necessitating stretch-out of these projects.

Indirect Liquefaction

Question: Please explain why you propose to discontinue funding for the LaPorte facility operation in fiscal year 1996. What do you do at LaPorte, and why is it no longer needed?

Answer: Proof-of-concept (POC) testing provides the engineering and operation database required by industry to assess scale-up and commercialization potential for direct and indirect liquefaction technology. Earlier oil price projections indicated that this data would be required by the year 2010 when oil prices were projected to be about $28-$30 per barrel. However, the Energy Information Agency Annual Energy Outlook for 1995 projects that oil prices will rise more slowly, to slightly more than $24 per barrel in 2010, therefore delaying commercial prospects for these technologies and making the POC operation not critical at this time.

The LaPorte Indirect Liquefaction Alternate Fuels Development Unit began operation in 1985 to develop the proof-of-concept (POC) engineering database required for the scale-up of advanced liquid phase indirect liquefaction technology. Based on the successful operation and test data obtained at Laporte, liquid phase methanol technology was selected for demonstration under round III of the Clean Coal Demonstration program with Air Products and Chemical, Inc. and Eastman Chemicals as the major participants.

The recent focus of the indirect liquefaction POC has been development of advanced liquid phase Fischer-Tropsch and oxygenate technology. Successful development of these technologies offers the potential of lower cost, environmentally superior diesel, gasoline and octane enhancers. Liquid phase dimethyl ether (DME) technology as demonstrated at LaPorte may be utilized in the Clean Coal demonstration. Since 1992, two liquid phase Fischer-Tropsch campaigns to produce hydrocarbon fuels have been conducted at the upgraded LaPorte facility. Results from the two campaigns are encouraging, indicating that the prospect is good to extend the success from liquid phase methanol to liquid phase Fisher-Tropsch. However, the delayed commercialization for liquefaction technology makes POC operation not critical at this time.

Advanced Research and Environmental Technology

Question: Research on coprocessing of coal with waste materials is budgeted for $129,000 as compared with $1,389,000 in fiscal year 1995. Why are you virtually eliminating this program?

Answer: The highest priority for coal research for the FY 1996 Budget Request is for Advanced Clean/Efficient Power Systems. Hence, given the need for fiscal restraint, the Advanced Clean Fuels Research including the coal-waste coprocessing has been reduced.

Question: The Consortium for Fossil Fuel Liquefaction has been conducting promising research on liquefying plastic and rubber wastes with coal. The budget activity which funds this work is being reduced from $2,015,000 in fiscal year 1995 to $200,000 in fiscal year 1996. What would it cost to continue the Consortium's work on schedule in fiscal year 1996?

Answer: Continuation of the program as originally planned would require an additional $1,800,000, or a total of $2,000,000.

B&W Air Toxics Facility

Question: What is the status of the B&W air toxics facility in Alliance, Ohio?

Answer: Work is now proceeding on Phase I, Facility Modification and Benchmarking. This work is scheduled to be completed by January 1, 1996. This will be followed by Phase II (Optimization of Conventional Systems). Following completion of this phase in mid 1997, Phase III, Advanced Concepts and Comparison Coal, will take place from mid 1997 through July 1998.

Question: The funding for the B&W project is $1.6 million in fiscal year 1995; what amount is included in the fiscal year 1996 budget request? Please explain any change in funding.

Answer: No funds were included in the FY 1996 budget request for this project. The air toxics field test program has shown wide variations in mercury capture. In view of strict budget limitations, it was decided that additional field testing of mercury emissions was a higher priority than the lab-scale control technology work at the B&W facility.

Question: What would it cost to continue this project on schedule in fiscal year 1996?

Answer: The estimated funding required in FY 1996 to complete this project on schedule is $1,800,000. No funds were included in the FY 1996 budget request for this project. The air toxics field test program has shown wide variations in mercury capture. In view of strict budget limitations, it was decided that additional field testing of mercury emissions was a higher priority than the lab-scale control technology work at the B&W facility.

Systems for Coproducts

Question: No funding is proposed for fiscal year 1996 to continue the cost-shared development of the mild gasification process development unit at the Illinois Mild Gasification Facility. Why has this program been zeroed out?

Answer: The highest coal program priority in the FY 1996 budget request (after the completion of the 45 clean coal projects) is power generation Research and Development. Eighty-eight percent of the coal mined in the U.S. in 1993 was used for electricity generation. Lower priority was assigned to coal fuels Research and Development. Mild gasification, which is a coal fuels Research and Development program, can produce a variety of products from coal, including coke, chemical feedstocks, and fuel and fuel blending components.

We did not request funding for the Kerr-McGee project because of budget constraints. The lower priority for this Research and Development area and that we already have the Encoal mild gasification demonstration project in the clean coal program (which produces different products from the Kerr-McGee process but is still a mild gasification technology). The recently completed National Research Council review of the Coal Program likewise recommended assigning a low priority to mild gasification.

Question: What exactly was this project designed to do?

Answer: The scope of the Illinois mild gasification projects includes the design, construction and operation of an advanced one-ton-per-hour mild gasification PDU which uses mild pyrolysis technology and upgrading to convert bituminous coals to premium-value form coke, chemical feedstocks and fuel blending components. Form coke is a replacement for conventional coke, which can be utilized in current blast furnaces to produce steel and for other metallurgical applications. Mild gasification processes are conceived to replace conventional coke ovens which are associated with significant environmental emissions. A project team headed by Kerr-McGee and the Institute of Gas Technology (IGT) was competitively selected to scaleup this mild gasification technology in November of 1991 under this cost-shared project.

Question: $4,840,000 was provided for this work in fiscal year 1995. What would it cost to continue the project in fiscal year 1996?

Answer: The FY 1995 funding should be sufficient to complete construction of the Illinois mild gasification PDU. However, because of cost growth, an additional $4,000,000 in FY 1996 would be required to conduct the one-year PDU operation. We did not request funding for the Kerr-McGee project because of budget constraints. The lower priority for this Research and Development area and that we already have the Encoal mild gasification demonstration project in the clean coal program (which produces different products from the Kerr-McGee process but is still a mild gasification technology). The recently completed National Research Council review of the Coal Program likewise recommended assigning a low priority to mild gasification.

Question: What costs would be incurred beyond 1996?

Answer: Beyond the $4,000,000 required for the scheduled one-year PDU operation, no other funds are required to complete the project.

Question: When would the project be completed if it were to continue on schedule?

Answer: At present, the conceptual and detailed design for the Illinois mild gasification PDU have been completed. The site has been prepared and the PDU equipment is on order. The contractor is scheduled to have construction complete by the end of FY 1995. If operation was conducted, the project would be completed by the end of the first quarter of FY 1997.

Advanced Clean/Efficient Power Systems

Question: Nearly $11 million was provided in fiscal year 1994 for advanced pulverized coal-fired power plant projects; $7.5 million was provided in fiscal year 1995; and you propose to reduce that further to $5 million in fiscal year 1996. Please explain.

Answer: The $7,500,000 provided in FY 1995 for advanced pulverized coal projects consisted of $6,400,000 for LEBS and $1,000,000 for AFB projects. The $6,400,000 for LEBS reflected a $1,100,000 reduction by Congress from the FY 1995 request. In FY 1996, because of budget constraints, hard choices had to be made among competing technologies. Therefore, it was deemed necessary to proceed with only one contractor.

Question: Funding for low emission boiler development is declining from $6,290,000 in fiscal year 1995 to $4,950,000 in fiscal year 1996. How promising is this technology?

Answer: The pulverized coal (PC) plant (which is what LEBS is) has been the work-horse of electric utility baseload power generation. Fifty-three percent of the electricity generated in 1993 was from coal and most of the coal power plants were PC plants with an overall average efficiency of about 32-35 percent.

The most modern PC plants have an efficiency of 38 percent. There are operating "supercritical" PC plants with higher efficiencies, but due to technical and management problems they are not as reliable and costly.

The objective of the LEBS program is to support U.S. boiler manufacturers to develop the next generation of PC plants that would have efficiencies in the 42 percent range, a six-fold (or more) reduction in emissions compared to today's federal standard, and reduce cost.

The U.S. boiler manufacturing industry is a mature industry with an in-place manufacturing and service industry. This should allow the next generation PC plants (LEBS), when developed, to be quickly deployed (sold) domestically and globally.

Question: There are currently 3 contractors working on the low emissions boiler program. What does your budget assume with respect to continuing these contracts in fiscal year 1996?

Answer: The FY 1996 budget assumes a down-selection to one contractor.

Question: What is the cost sharing in this program?

Answer: The cost-sharing is a minimum of 25 percent for phases II and III and 50 percent for Phase IV.

Question: Should we increase the cost-share requirement? Please explain.

Answer: The cost-share provided by the contractor has already been increased from 15 percent in phases II and III to 25 percent and 25 to 50 percent in Phase IV. We believe it would be difficult to obtain further increases at the phase II and III stages of development, but we will attempt to obtain additional cost-sharing.

Question: What would it cost to continue 2 contractors in fiscal year 1996? How does that compare with the amount in your request?

Answer: The cost to continue with two contractors in FY 1996 would be $9,300,000 million. This compares to the FY 1996 request of $5,000,000 million.

High Efficiency/Integrated Gasification Combined Cycle

Question: Why is funding for the advanced hybrid fixed-bed gasifier improvement facility and associated research declining from $9,236,000 in fiscal year 1995 to $3,905,000 in fiscal year 1996?

Answer: Money requested in FY 1995 was for the construction of the project. Upon completion of the construction, the funding demand is reduced and therefore the lower amount is consistent with the amount requested in FY 1996.

Question: Where is this facility located and what is it designed to do?

Answer: The gasification product improvement facility is located at Monongahela Power's Fort Martin Power Station on the Monongahela

River, 4 miles north of Morgantown, Monongalia County, West Virginia. The facility is designed to process coal fines and caking coal to produce tar-free product gas and land-fillable dry ash. The heart of the facility is an advanced hybrid fixed-bed coal gasifier, which features a simplified design and is capable of higher efficiency and lower capital and operating costs than the present generation of coal gasifiers that are now beginning to see commercial introduction.

High Efficiency/Pressurized Fluidized Bed

Question: How much of the nearly $6 million decrease for high efficiency pressurized fluidized bed research is due to the completion or nearly winding down of projects, and how much is due to project terminations or slowdowns?

Answer: The $6,000,000 decrease is due to the following:

- Completion of the TIDD filter system testing in FY 1995 located in Brillant, Ohio ($1,800,000).
- Completion of the Second Generation Advanced PFB system testing in FY 1995 located in Livingston, NJ ($2,500,000).
- The reduced funding need in FY 1996 for the Wilsonville PSDF is due to prior year equipment purchase and construction schedule requirements (in particular FY 1993 and FY 1994). The FY 1996 schedule will move into system check-out and shakedown operation ($4,500,000). These decreases are partially offset by a request for a $2,800,000 funding increase in support of HAPS, Advanced and Improved particulate control testing R&D.

Advanced Research and Environmental Technology

Question: Please describe the "Combustion 2000" program and your involvement in the program?

Answer: The "Combustion 2000" program consists of two major technology-focused activities. The first is the Low Emissions Boiler System (LEBS) activity which is developing technology for advanced, high efficiency, low emission coal-fired steam cycles for electric power generation. The second is the High Performance Power Systems (HIPPS) which is developing very high efficiency, coal-based indirectly fired combined cycle systems. The Advanced Research activities of the Clean Efficient Power Systems, Advanced Research and Environmental Technology subprogram address enabling science and technology for both types of systems. The principal activities include fundamental and exploratory research on advanced concepts for control of NO_x and other pollutant formation; management of ash and slag effects on system performance and heat transfer: advanced concepts for system integration and control; and advanced design methodologies.

Question: How will the Combustion 2000 program be impacted by your proposed funding reduction?

Answer: In FY 1995, the Advanced Research portion subprogram included a new, focused initiative to address high priority research topics critical to achieving the goals of Combustion 2000 systems being developed through the Pittsburgh Energy Technology Center. This includes projects to develop design tools to enable prediction of ash/slag impacts on high temperature heat transfer components and system integration methods to enable Combustion 2000 Power Systems to meet efficiency and cost objectives. The projects initiated include Physical Sciences, Inc., Pennsylvania State University, Massachusetts Institute of Technology, Reaction Engineering International, and the Advanced Combustion Engineering Research Center at the University of Utah.

Question: What was the purpose behind your "Mega PRDA" for super clean systems?

Answer: The intent of the super clean portion of the MEGA PRDA was to solicit proposals for system approaches to achieving the ever increasing levels of cleanup required by the Clean Air Act after the year 2000 as the economy expands under the emissions cap and more stringent requirements.

Question: What is the status of that program?

Answer: Proposals have been received and evaluated. Awards are to be made in August 1995.

Question: What economies do you hope to achieve through the Mega PRDA approach?

Answer: The Mega PRDA approach was deemed to be the more economical method of covering the wide spectrum of technological concerns embedded in the generic topic of environmental control. It allows proposers the widest possible latitude in defining novel approaches to the overall objectives of the solicitation, and in so doing, avoids the duplicative costs of separate procurements for each technology or goal involved.

Question: To what extent will you use this approach for other programs? Please provide details for the record.

Answer: The system approach employed in this solicitation affords participants the maximum flexibility in proposing systems approaches in dealing with the complex problems of multi-technology systems such as coal fired boilers. In this approach, the solution proposed could involve coal preparation technology complemented by in-furnace control and flue gas cleanup to achieve operating efficiencies not attainable by any of the separate technologies alone. This concept, a systems approach, lends itself to almost any Research and Development effort with defined end goals or objectives.

Question: You appear to be eliminating funding for PETC and METC in-house research in the emissions control area. Why is that?

Answer: We are not eliminating funding for this work. Increased funding was provided in FY 1995 for the construction of the Fluid Bed Desulfurization/Syn Gas Generator (PDU) at METC which is to be completed by FY 1996.

Environmental Activities

Question: Why do your emission trends and forecast studies require $2,241,000 in fiscal year 1996, as compared with $1,514,000 in fiscal year 1995?

Answer: The Environmental Activities line item, where this funding is included, is a primary source of Departmental funding for assessing environmental cost issues associated with fossil fuel production and use. This information is used for DOE comments on proposed environmental legislation and regulations, and helps to ensure that additional costs to industry and the public, which are often measured in billions of dollars, are appropriately balanced against environmental benefits. The $727,000 increase in FY 1996 is in anticipation of an unusually large demand for environmental cost analysis during this timeframe, which would focus on the following areas:

- Regulatory reform: In FY 95, DOE is working with the Environmental Protection Agency (EPA) to identify more cost-effective mechanisms for regulating emissions from gas and oil related activities (well production, refining, etc.). Fossil Energy brings special technology expertise and industry rapport to the table. Assuming that these initial low budget efforts are successful, FY 1996 funding expands this activity for other fossil fuel areas.

- Powerplant NOx emission regulations: Section 407 of the Clean Air Act calls for EPA to regulate existing powerplant nitrogen oxide emissions in two phases. Fossil Energy led DOE's participation in the first phase and, following court reversal of EPA's proposal, the Fossil Energy analysis is being used to support a revised regulation by EPA. The second phase of the rulemaking, which covers about three times as many plants as the first phase, is scheduled to be promulgated by 1/1/97. Funds are included to support the technical and policy analysis of the rulemaking, which must occur in late 1995 and early 1996 for EPA to meet the statutory schedule.

- Clean Air Act revision: Several bills have been introduced in the current Congress to modify significant provisions of the Clean Air Act. Funds have been allocated to support assessment of these proposals.

- Superfund Reauthorization: DOE has been a very active interagency participant in the debate on Superfund Reauthorization because the energy industry could be heavily impacted by some of the proposed changes. DOE has developed a model to estimate these impacts, which is currently being evaluated by an interagency group. It is anticipated that additional data gathering and analysis in the areas of risk assessment and State programs will be needed in the FY 1996 timeframe to address legislative and/or regulatory issues.

Question: If you were held to last year's funding level for these studies, what wouldn't you do?

Answer: For the environmental cost assessment issues addressed in the previous question, Fossil Energy would respond within existing funds. With lower funding the scope and thoroughness of these efforts would be reduced, and it would be more difficult for DOE to defend its positions in the interagency process, especially if it is attempting to justify the position that energy/cost impacts of environmental proposals are too high given potential benefits.

Coal Technology Export

Question: At the same time as you propose to make dramatic reductions in many of your coal research programs, how do you justify a 45 percent increase in the coal export program?

Answer: The FY 1995 Appropriation for the coal technology export activity reflected a $504,000 reduction from the planned level of funding. The FY 1996 request reflects our efforts to continue to provide the necessary trade mission support, international program coordination, Departmental representation in various domestic and international trade and energy organizations, and to complete regional implementation activities. These areas have expanded over the past two year, and the FY 1996 request reflects our greater involvement in the Administration efforts to promote international trade in the area of coal technology.

Question: What will you be doing in fiscal year 1996 that requires such a large increase in funding for coal technology exports?

Answer: FY 1996 program activities include:

- Support Departmental trade missions and reverse trade missions.
- Coordinate FE international program activities and initiate procedures to more effectively coordinate international activities while eliminating duplication of effort.
- Represent Fossil Energy on various government and international trade and energy related organizations such as the Trade Promotion Coordinating Committee (TPCC), The International Energy Agency's Working Party for Fossil Fuels (WPFF), the U.N. Economic Commission's Energy Committee, and the Asian-Pacific Economic Cooperation (APEC).
- Finalize the seven fossil energy regional implementation plans that will provide the framework in which our international markets will be developed in the future.

Question: Do you have other technology export programs in your budget? If so, what are they, and what funding is included for each of them in fiscal year 1996 as compared with fiscal year 1995?

Answer: The Coal Technology Export line item is the only program activity that is devoted entirely to the export of Fossil Energy technologies to foreign markets.

Bioprocessing of Coal

Question: What projects are you currently funding on the bioprocessing of coal?

Answer: The FY 1995 Bioprocessing Program consists of a core research activity with projects conducted at two National Laboratories Oak Ridge National laboratory (ORNL) and Idaho National Engineering Laboratory (INEL) and universities; plus three cost-shared collaborative projects between three National Laboratories (ORNL, INEL and the National Renewal Energy Laboratory) and industrial partners.

Question: What types of issues are addressed by these projects?

Answer: This program of fundamental and exploratory research focuses upon identifying new potential biological pathways for preventing the production of pollution from coal use by removing the undesirable constituents from the coal and/or combustion gases using biological catalysts; and for converting coal and coal-derived liquids and gases to higher value, clean fuels. Topics also include bioreactor engineering to identify viable approaches to scaling up bioprocesses to the reaction rates and quantities necessary to be economically viable for commercial use.

Question: How many projects will you be able to fund in fiscal year 1996 at the reduced funding level of $990,000?

Answer: In FY 1996 the core research activities at ORNL and INEL will be funded at a reduced level and only one of the three cost shared collaboration projects at the three labs (ORNL, INEL, NREL) will be continued.

Question: How does that compare with fiscal year 1995 with funding of $1,909,000?

Answer: In comparison to FY 1995, the core research projects at ORNL and INEL will be reduced and two of the three national lab/industry collaborative projects (ORNL, INEL, NREL) will be terminated in FY 1996. The decision of which one to retain will be based upon a review to be conducted during FY 1995.

Question: How will you change the focus of the program to accommodate the reduced funding level?

Answer: Two industry/National Lab cost shared activities on removing pollutants from combustion gases will be terminated and the core bioprocessing research at ORNL and INEL will be reduced.

Question: How will the reductions be applied to the National Labs that are currently involved in this program? (INEL, ORNL, NREL)

Answer: The decision on which laboratory/industry collaboration to continue will be made based upon a program review to be conducted in FY 1995 where progress-to-date, prospects for future progress, and degree of industry commitment are considered. Similarly, the core research activities will be evaluated to determine which activities to continue at ORNL and INEL.

Question: What amount of funding is each of these labs receiving in fiscal year 1995? What amount is each likely to receive in fiscal year 1996?

Answer: The funding by Laboratory for FY 1995 and FY 1996 is as follows:

($ in thousands)

	FY 1995	FY 1996
ORNL		
Core Program	$745	$500
Industry Collaborative	200	TBD*
INEL		
Core Program	600	300
Industry Collaborative	200	TBD*
NREL		
Industry Collaborative	200	TBD*

* one project to be continued at approximately $200,000.

Question: Funding for education and training at historically black colleges and universities is proposed for an increase of more than 100% in fiscal year 1996. Please explain the proposed increase for HBCUs in fiscal year 1996.

Answer: The request primarily reflects a significant increase in the number of quality proposals being received. The investment in raising the overall level of historically black colleges and universities' (HBCU) competitiveness with majority institutions in the field of fossil energy research is beginning to pay-off. But to realize the goal and position HBCU graduates to assume priority mainstream leadership and technical roles in American fossil energy commerce requires follow through on what was started some six years ago.

Question: What exactly do you provide for these colleges and universities now?

Answer: Beyond providing for fossil energy research funding through an annual competitive solicitation, an annual symposium is held to foster interaction between the private sector, major universities and the HBCU's; training is provided through faculty/student participation at DOE/Fossil Energy facilities and major universities through internships, and technical information and research hardware is exchanged.

Question: How many applications do you receive for this program? Of those how do you rank the proposals -- Are some ranked as clearly superior, while others are acceptable, and still others are unacceptable? Please explain.

Answer: The number of applications have risen over the years, e.g., 22 being received in 1992, 26 in 1993 and 32 in 1994. The proposal evaluation procedure follows normal DOE practice for competitive solicitations. A technical evaluation panel ranks the proposal numerically against the criteria set forth in the solicitation leading to the identification of those that are superior, in the mid-range or acceptable, and still others that are not acceptable. A program policy factor can be applied to enhance diversity of schools chosen but the technical merit is the prime determinant in selection.

Question: Currently you have enough funding to finance between 4 and 6 awards. How did you decide that number should be increased to between 8 and 12 awards?

Answer: Of the 32 proposals received in 1994, at least 12 warranted funding based on technical merit.

Natural Gas Research

Question: It is unlikely that the Committee will be able to sustain all of the increases you have requested in oil and gas research. Would you provide the Committee with a priority listing of the new and expanded programs in this area.

Answer: The expanded and new areas in the Natural Gas and Oil Programs are listed below in priority order by program:

Natural Gas

1) Drilling, Completion & Stimulation ($1.2 million)
2) Environmental & Regulatory Impact Analysis - NORM Treatment & Disposal ($0.9 million)
3) Climate Change Action Plan - Coal Mine Methane ($0.8 million)
4) Advanced Computational Technology Initiative (ACTI) ($2.0 million)
5) Delivery & Storage - Delivery ($1.0 million)
6) Environmental Research & Regulatory Impact Analysis Program Planning & Data Analysis ($0.4 million)
7) Delivery & Storage - Storage ($0.8)
8) Environmental Research & Regulatory Impact Analysis Outreach & Technology Transfer ($0.5 million)
9) Resources & Reserves ($0.8 million)
10) Environmental Research & Regulatory Impact Analysis Downstream Operations ($0.8 million)
11) Low Permeability Formations ($0.7 million)
12) Advanced Computational Technology Initiative (ACTI) ($8.5 million)

Oil Program

1) Processing/Environmental Compliance ($1.2 million)

2) Processing/Pollution Prevention ($1.0 million)
3) Supporting Research/Reservoir Characterization ($4.135 million)
4) Supporting Research/Technology Transfer ($1.061 million)
5) Environmental Risk-Based Regulatory Data Management ($1.5 million)
6) Processing/Upgrading Technology Development ($1.0 million)
7) Supporting Research/Exploration and Drilling ($0.845 million)
8) Field Demonstration/Assistance to Independents ($4.214 million)
9) Field Demonstration/Class Analysis and Technology Transfer ($3.0 million)
10) Field Demonstration/Rocky Mountain Oilfield Testing Center ($2.5 million)
11) Field Demonstration/Gulf Coast Heavy Oil ($2.0 million)

Question: To what extent are these new and expanded programs more important than your current oil and gas research efforts?

Answer: These new and expanded projects are based on the core program and assume the completion of the core program. These projects will make a far smaller contribution to long-term stable supplies of natural gas without the core program. Therefore, these projects are less important than the core program.

Almost no new program elements are being proposed. Most of the increase is for expanding ongoing efforts to increase the effectiveness of the program in addressing the needs of the oil industry. The last three items on the above list, Field Demonstration/Class Analysis and Technology Transfer ($3.0 million), Field Demonstration/Rocky Mountain Oilfield Testing Center ($2.5 million), Field Demonstration/Gulf Coast Heavy Oil ($2.0 million), are new program elements and are considered to be of lower priority than the current research efforts.

Question: If oil and gas research were held to last year's level of funding, which projects would you eliminate or scale back?

Answer: If the FY 1996 Natural Gas budget was constrained to the FY 1995 level, all 13 of the Natural Gas projects would be cut.

If the FY 1996 oil budget was constrained to the level of FY 1995 funding, the last two projects on the above priority listing would be eliminated: Field Demonstration/Rocky Mountain Oilfield Testing Center ($2.5 million) and Field Demonstration/Gulf Coast Heavy Oil ($2.0 million). The project with the next lowest priority, Field Demonstration/Class Analysis and Technology Transfer ($3.0 million) would be scaled back to $2.435 million, to reduce the total Oil Budget by $5.065 million to keep funding flat.

Resource and Extraction

Question: Natural gas resource and extraction research is proposed for nearly a 60% increase in funding. Why is drilling, completion, and stimulation research increasing from $4.8 million in fiscal year 1995 to $6 million in fiscal year 1996?

Answer: The 25 percent increase is comprised of several discrete elements, 80 percent of which involves the development of advanced drilling technology. The remaining 20 percent addresses advances in stimulation technology. These programs incorporate near-term enhancements and accelerated technology deployment.

The consensus of the DOE, the Gas Research Institute, and the natural gas industry is that a substantial reduction in drilling, completion, and stimulation costs is necessary to achieve the future natural gas production goals at currently forecasted natural gas prices. It is further believed by the Gas Research Institute and the industry that this area has been historically underfunded in past DOE budgets. This increase in funding addresses this historical situation in a highly focused manner aimed at reducing the cost of producing a unit of natural gas.

The common objective of the drilling projects is to reduce the cost of drilling new wells through an increased rate of penetration (i.e., advances in air percussion techniques and high pressure down hole pumps), a reduction in wellbore diameter (i.e., advances in slim hole drilling hardware and real-time monitoring of bit face parameters), and a reduction in formation damage due to drilling (i.e., advances in underbalanced drilling and real-time monitoring of bit face parameters).

The objectives of the stimulation projects are to improve overall hydraulic fracture design through assessment of improvements in fluid rheology, proppant transport, and simulation of fracture geometry.

Question: What work are you doing in the area of low-permeability reservoirs and why is funding for these efforts increasing from $4,777,000 in fiscal year 1995 to $5,432,000 in fiscal year 1996?

Answer: The project area referred to as low-permeability formations focuses on developing technology to overcome the barriers associated with producing natural gas from geological formations which are difficult to produce due to the resistance of the rock to fluid flow (also known as low permeability).

Projects in this area fall into two primary categories: (1) detection, mapping, and analysis of naturally fractured gas reservoirs (Mapping); and (2) research, development, and demonstration (Demonstration) of the most economically efficient drilling, completion, stimulation, and production technologies in these geologically complex reservoirs.

Funding in FY 1996 for the Mapping area is decreasing by about 4 percent, and funding for the Demonstration area is increasing by about 17 percent over FY 1995. The increase is primarily due to the planned initiation of a project to test the application of various technologies such as drilling technologies (i.e. bits, motors, sensors), completion/stimulation technologies (i.e. fracture fluid and proppant design, horizontal drilling) in a high priority basin. The specific location of this project is, as yet, unknown, but it will probably be located in a geologic basin in the western U.S., such as in the Colorado, Utah, or Wyoming area.

Question: Resources and reserves research has increased from $2,158,000 in fiscal year 1994 to $4,440,000 in fiscal year 1995 and you propose to increase it to $5,286,000 in fiscal year 1996. Why is the budget increasing again in fiscal year 1996? On page 77 of the budget it implies all you are doing is continuing your 1995 efforts.

Answer: The budget in this area for FY 1994 was $3,121,000 not $2,158,000. The difference is that in FY 1994, the Secondary Gas Recovery project was listed as a separate key activity. In FYs 1995 and 1996, it is included in a single key activity. Therefore, $2,158,000 plus $963,000 for Secondary Gas Recovery equals $3,121,000 for the Resources and Reserves program area.

The 19 percent increase from FY 1995 to FY 1996 is due primarily to the initiation of a new project in FY 1996 entitled Basin Analysis. The objective of this project is to develop a probabilistic economic and production assessment (engineering-type assessment) of U.S. natural gas basins. This project represents a "next step" in converting the geological assessment of onshore and state waters gas resources, conducted by the U.S. Geological Survey (released February 14, 1995), and the pending estimates of offshore and deep waters gas resources, to be conducted by the Minerals Management Service (expected release late 1995), to proven reserves of natural gas.

This project is a continuation of the FY 1995 program in that this data will be used in modeling the natural gas system from the reservoir through the market place (end use). Model and database development was initiated in FY 1993, and has been an important part of the natural gas supply program since that time.

Question: Would you briefly describe what you are doing in the area of coalbed methane recovery as part of the Climate Change Action Plan.

Answer: We are seeking to foster the recovery and utilization of methane (natural gas) released to the atmosphere that occur during and after underground mining of coal. Presently, over 200 billion cubic feet of methane (the principal component of natural gas) is released from coal and exposed gas-bearing rock strata as the coal is mined. Perhaps 35 billion cubic feet is economically collected now, mostly from only a handful of very "gassy" mines that happen also to be quite close to a major natural gas trunkline. The rest finds its way to the atmosphere, where its potential to cause "greenhouse" problems is seen to be 20 to 40 times as severe per unit as carbon dioxide releases.

The goal of this program effort is to extend the economic margins for coal miners to economically capture and make use of the methane before it is passed to the atmosphere. This program will provide coal mining companies and other project partners with technically feasible and cost effective options to voluntarily reduce methane emissions, avoiding the command and control approach of regulation. Through precise applications of various collection, gas upgrading, power generating, and related system components, it is projected that greater methane capture and use can be realized from less gassy underground mines. This includes capture from low percentage methane ventilation air as well as post-mining seepage of methane/contaminant gas mixtures.

Our target by the year 2000 is to show the economic feasibility of doubling or tripling underground coal mine methane capture and use, if not more.

To implement this effort, a competitive procurement solicitation has been issued by our Morgantown Energy Technology Center, requesting cost-shared (at least 50%) demonstrations of advanced capture and/or use of coal mine methane. Proposals are due March 31, 1995, and bidder selections are contemplated by mid-spring, 1995, with awards to follow. Sucessful bidder work will include pre-demonstration feasibility studies, to be followed by design, construction and operation of the chosen demonstrations, after approval by the Department of Energy. Design and construction approval is not planned until preparation and submission by the Department to the Appropriations Committees of an overall feasibility study of the program, as requested in the FY 1995 appropriation legislation for Fossil Energy. This submission is planned for early summer.

Interest has been higher than expected on the part of underground coal producing firms and gas turbine/fuel cell vendors, as well as electric utilities interested in partnership demonstrations to achieve methane emission reductions on a voluntary basis.

Question: Please explain why funding for coalbed methane recovery increases from $1,222,000 in fiscal year 1995 to $1,984,000 in fiscal year 1996. What are the outyear costs associated with this project?

Answer: It is estimated that $1,984,000 requested for FY 1996 should be sufficient to cover incremental government cost share requirements of the coal mine methane recovery demonstration projects to be selected in FY 1995. Initial work in these demonstrations will focus on design and advanced orders for components, required before construction and operation of the demonstrations. Several regional demonstrations are anticipated.

Outyear costs are projected at $16,800,000 with project completion in the Year 2000. The overall estimate of $20 million for this effort as set forth in the Administration's Climate Change Action Plan (October 1993) will be refined after evaluation of the proposals for cost-shared demonstrations is completed this spring. Budget requirements are expected to peak at $6,000,000 in both FY 1997 and FY 1998, as the demonstrations are constructed/ installed. Annual requirements will then drop to $2,000,000 in FY 1999 as actual operations proceed, and then increase slightly to $2,800,000 in FY 2000 to complete operations, evaluations, and technology transfer efforts.

Climate Change Action Plan

Question: How many projects do you have in the budget in support of the Climate Change Action Plan?

Answer: The Department has requested funding for two activities in FY 1996 within the Office of Fossil Energy in support of the Climate Change Action Plan; $1,984,000 for coal bed methane capture and utilization and $8,000,000 for accelerated demonstration of advanced fuel cells.

Question: Please provide a list in budget activity/subactivity order for the record which briefly describes each of these projects, funding levels for fiscal year 1995 and 1996, and out year cost estimates by years.

Answer: Activity - Accelerate demonstrations of advanced fuel cells

($ million)

Funding:	FY95	FY96	FY97	FY98	FY99	Total
	$0.0	$8.0	$12.0	$0.0	$0.0	$20.0

Activity - Provide government cost-share funds for competitively chosen, industry demonstrations of collection and use of methane emissions from underground coal mines.

($ million)

Funding:	FY95	FY96	FY97	FY98	FY99	FY00	Total
	$1.2	$2.0	$6.0	$6.0	$2.0	$2.8	$20.0

Advanced Computational Technology Initiative

Question: What is the Advanced Computational Technology Initiative (ACTI) and why does funding for this initiative increase in the natural gas research area from $3,485,000 in fiscal year 1995 to $14 million in fiscal year 1996?

Answer: The Advanced Computational Technology Initiative (ACTI) is an industry-driven program designed to enhance, apply and transfer technologies developed within our National Laboratories into RD&D partnerships with the US gas and oil industry.

Thirty-one projects were selected for funding in February 1995, with FY 1995 DOE funding of $27 million and industry cost-share of $38 million. These projects include about 150 participants, including 66 gas and oil companies, 38 service companies, 25 universities, 6 trade associations, 4 state organizations, 2 Federal agencies, and 8 National Labs.

Although the FY 1995 appropriation for ACTI was $3.48 million, the FY 1995 Gas Program request for ACTI funding was $10 million. Our FY 1996 request is for $14 million. This Office believes that significant advances can be made to increase our resource base through the use of advanced computational technologies. The recent use of supercomputing technology in conjunction with 3-D seismic surveys is a case in point. It is now possible to produce images of previously undetectable gas-bearing structures beneath salt layers in the Gulf of Mexico. This kind of new, but not inexpensive, technology, with other expected breakthroughs, are expected to increase the domestic recoverable resource base by more than 200 trillion cubic feet higher than under current technology. At the current wellhead price of $2 per thousand cubic feet, this translates into a potential $200 billion resource! Our budget request reflects both the industry's desire to gain access to defense capabilities and expertise within the National Laboratories, and to collaborate, through cost-shared agreements, with universities, and other industrial partners, to strengthen and preserve the technological leadership of our petroleum industry.

Question: In fiscal year 1995 you have funding as well as in the oil research program for ACTI and that funding is remaining relatively constant in fiscal year 1996. Please explain.

Answer: The Fossil Energy Oil and Gas budget request represents an integrated core program that encompasses upstream oil and gas programs. Funding requests in the gas program reflects the Administration's emphasis on increased utilization of natural gas to meet this nation's energy needs. It also reflects the needs of the gas supply industry. As in the example from the previous answer, advanced computational 3-D seismic surveys can be applied to both oil- and gas-bearing strata. Industry is very optimistic about the potential for future discoveries,and therefore it has been aggressive in initiating the process of matching their research needs with the capabilities of other collaborating institutes. The current revolution in parallel computing and the ability to move information over the rapidly developing National Information Infrastructure offer great opportunities for improving our ability to recover these critical resources.

Question: The Congress agreed to appropriate $10 million for ACTI in fiscal year 1995 but your budget shows only $7.6 million; what happened to the rest of the funding?

Answer: The $7.6 million is being applied toward new proposals for the FY 1995 ACTI program that represents one of four technology areas in the Natural Gas and Oil Technology Partnership program. The remainder of the appropriations was used to fund ongoing Borehole Seismic Technology projects that fit into the advanced computational area. The Borehole Seismic Technology area is another technology area in the Partnership. The projects are (1) multistation borehole seismic receiver, (2) microborehole seismic instrumentation, (3) advanced telemetry systems, and (4) 3-component vibratory source. These projects were "grandfathered" into the ACTI program, under the same Partnership. For the first year of ACTI, we did not want to move these ACTI-type projects from the Borehole Seismic Technology area to ACTI. Other technical areas within the Partnership include Oil Recovery Technology and Drilling and Completion Technology.

Question: What amount of funding is included in the Energy Water appropriations request for ACTI?

Answer: For FY 1996, Defense Programs has requested $20 million and Energy Research has requested $10 million for a total of $30 million.

Question: Why is this program being funded in 2 separate appropriation bills?

Answer: ACTI is a Departmental initiative that integrates the mission and requirements of three different Offices to accomplish dual missions. Defense Programs with the requirement to maintain defense capability through dual use requirements contribute to ACTI objectives while maintaining their primary mission. Energy Research with the basic research mission contribute to ACTI objectives while maintaining their primary mission. Fossil Energy has its primary mission of fostering new and approved technologies for reservoir characterization, enhanced natural gas and oil recover, and processing research accomplished through ACTI.

Question: Are there other instances of projects in your program where funding is partially provided in other appropriation bills? If so, please identify what they are and for each program specify the amount of funding in each appropriation for fiscal year 1995 and the amount requested for fiscal year 1996.

Answer: There are no other project areas in Fossil Energy where efforts require funding from more than one appropriation a year to fully meet project goals. The only other current effort supported by funds outside of the Interior appropriation is Fossil's Fuel Cell demonstration cited discussed under Fossil Climate Change Action Plan questions. Here funds were appropriated in Defense legislation in FY 1995 in Fossil's legislation for this effort. However, in FY 1996, funds are requested to continue this effort only in Fossil's Interior request.

Delivery and Storage

Question: Natural gas delivery and storage research is proposed for an increase of nearly 200%. What are you doing in the natural gas delivery and storage area and why do you think it is important to increase this programs dramatically in fiscal year 1996?

Answer: The FY 1996 Delivery and Storage Research and Development (R&D) budget request of $3.1 million includes $1,000,000 to initiate a Delivery Program and $2,040,000 for the Storage Program.

The gas delivery projects of the Delivery and Storage Program were not funded in FY 1994 and FY 1995. There are two major projects in the Delivery Program. The first project is the advancement of uniform production reporting model guidelines for states to ensure accurate, timely, and reliable gas production data and deliverability information, and to lower producers' administrative costs (FY 1996 request: $0.7 million). The second project is the development of improved and expanded real-time pipeline flow measurement and system monitoring technologies for improving the reliability of natural gas deliveries (FY 1996 request: $0.2 million). The Department, the gas industry, and state governments need accurate and timely gas information and data to make sound policy and business decisions and to assess resource availability. In addition, the Federal government needs to ensure that gas and oil production on federal onshore and Indian leases are valued properly to maximize royalty income. Delivery information is important for states because of their emergency management responsibilities. Further, deliverablity information provides for better control of state resources to avoid abandonment of oil and gas wells, and it increases state agency efficiencies by providing for cross-agency sharing of data within conservation, royalty, and tax agencies. For industry, it simplifies the producer reporting requirements, lowers producer administrative costs, and increases the timeliness in the reporting and distributing of production data and the accessibility of data to outside users. In addition, it improves the accuracy of the data and the consistency of the data by promoting nationally accepted standards. Accurate production data is essential to industry to make effective business investment decisions. Improved pipeline gas flow metering and measurement technology Research and Development is necessary to ensure continued efficient and reliable gas industry performance. Gas delivery research is critical to the energy security and reliability of the natural gas system.

The Delivery Research and Development program is a result of the Federal Energy Regulatory Commission's Order No. 636 impact on industry. Under FERC Order No. 636, the Commission's aim was to make the industry more competitive. The increased competition placed further reliance on accurate and timely state production reporting data and information and on real-time flow monitoring and metering to maximize the use of pipeline capacity while operating efficiently. The latter has had the adverse effect of forcing pipelines to revamp their measuring capabilities so that flow data could be measured more accurately, gathered, and processed more rapidly. To meet the requirements of Order No. 636, pipelines will be required to install new types of equipment and facilities. The costs of any new equipment and facilities for pipelines will be borne by the firm transportation customers such as the residential and industrial customers. Current rate designs, however, do not provide incentives to pipelines to invest in the type of research and development that is needed and that the Department will develop in its program. Reductions in costs of equipment and gains in efficiencies that result from the Delivery Program ultimately benefit residential end users and industrial customers. The gas storage research of the Delivery and Storage Program was initially funded in FY 1994 at the $1.0 million level, and three multi-year activities were initiated to address storage well revitalization, storage reservoir management, and advanced storage concepts. Detailed stakeholder discussion with the storage industry and the Gas Research Institute (GRI) during FY 1995 has resulted in the identification of three priority areas of technical need in FY 1996 and the development of a joint GRI and DOE Storage Program. These areas include deliverability enhancement and revitalization, advanced storage concepts, and storage injection flow measurement technology development. The Storage Program will lead to cost reductions and improved storage deliverability for the storage industry. The storage revitalization project focuses on development and testing of new and novel engineering and chemical stimulation technology that could reduce by five percent the $100 million annually spent by the storage industry to maintain the current deliverability of existing fields. In addition, a storage reservoir management study was initiated and is underway to determine the magnitude of underground gas storage losses and if new technology is required to minimize or mitigate those losses. DOE will develop and demonstrate new and improved technologies for detecting and inhibiting gas migration from storage reservoirs through field verification tests and reservoir modeling. Further, a storage/user interaction study was initiated to determine the need for new technology in the area of advanced storage concepts to expand storage capacity to meet the forecasted increase in gas utilization. Those projects were incrementally funded with the $1.066 million FY 1995 budget. In addition, an Energy and Natural Resource Information Management System (ENRIMS) data base linking gas storage to pipeline capacity will be under development at Energy Information Agency.

Question: How high a priority is this research as compared with other increases you have requested in the natural gas area?

Answer: The Delivery and Storage research program is a high priority new program initiated in FY 1994 in response to a need for a more balanced natural gas program beyond the traditional gas supply (resource and extraction) and gas utilization (turbines and fuel cell) portions of the program. Gas delivery and storage are the critical link between supply (producers) and demand (consumers). In addition, the pipeline industry, because of current rate designs, and the gas storage industry, prior to FERC Order No. 636, has not had the incentive to take advantage of the benefits of new technologies which typically are being developed in the gas supply side of the business. As gas storage continues to become more competitive due to regulatory changes initiated. under FERC Order No. 636, storage operators are discovering that new technologies must be developed and advanced which will lower their operating costs and overall cost of service to their customers and make them more competitive in the marketplace.

Advanced Turbine Systems

Question: The Fossil Energy budget funds research on turbines for utility applications. The energy efficiency budget funds turbines research for industrial applications. Funding for Fossil Energy's turbine research is increasing by $6.3 million. What is the difference between your technology research for advanced turbine systems and the natural gas initiative advanced turbine program?

Answer: The Advanced Turbine Systems Program, as described in the program activity portion of the budget request (P79), is in two sections: Technology-Base Development and Natural Gas Initiative. Technology-base development includes funding for the South Carolina Energy Research and Development Center (Clemson University), METC in-house activity, Oak Ridge Laboratory's manufacturing technologies, and the coal application effort. The natural gas initiative includes funding for the gas turbine manufacturers. This portion of the program is completing, in FY 1995, the concept development phase and initiating the utility system development and demonstration phases.

Question: Your request would more than double funding for the turbine program as compared with fiscal year 1994. Please explain.

Answer: In FY 1994, the program was just getting under way. The higher funding request for the ATS Program in FY 1996 reflects the transition of the activity from cycle evaluation and concept development, which are basically studies, to the component development phase. Component development involves research, component design, fabrication of test facilities, and component testing. This activity naturally requires a higher level of funding in FYs 1995, 1996, and 1997. The funding requirements and schedules were detailed in the July 1993 Report to Congress on the ATS Program. The funding is in accordance to the required funding profile.

Question: What are the outyear costs for this program?

Answer: The estimated cost to DOE for the ATS Program, FY 97 through FY 2000, is $190.8 million.

Question: To what extent could this program be stretched out and what amount of funding would be required in fiscal year 1996 and beyond for a stretched out program?

Answer: The ATS Program is highly leveraged, with significant private sector contribution through direct cost sharing to the program. Private sector turbine manufacturers will commit in excess of $150 million to the Fossil Energy-funded portion of the program through the year 2000. Extending the program would delay the commercial introduction of advanced turbine systems (developed under the program), would minimize market penetration (domestic and international), and financial return on the Government and turbine manufacturers investment. The program's turbine manufacturers have indicated the present pace of development must be maintained to enable commercial offerings to occur within the market window on 2001-2002.

Extending the program would: increase the overall program cost; impact the willingness of the turbine manufacturers to provide the significant cost sharing required; and minimize market penetration for advanced turbine systems; thus, reducing the return on the program investment.

Environmental Research/Regulatory Impact Analysis

Question: Please explain why you need to increase outreach and technology transfer of environmental information related to natural gas supply from $150,000 to $650,000.

Answer: The increase is for a cooperative, two-year, cost-shared task with the Petroleum Technology Transfer Council. The objective is to develop an environmental information module that will help the independent producers comply with environmental regulations. The products will be information on environmental regulations, scientific and technical data, and industry resource lists that will be available on electronic networks for the independent gas and oil producers.

Question: What are you doing in the area of naturally occurring radioactive materials treatment and disposal and why is the budget for this project increasing from $1,525,000 in fiscal year 1995 to $2,445,000 in fiscal year 1996?

Answer: Our Naturally Occurring Radioactive Material (NORM) core program falls into three fundamental areas: field testing; risk assessment; and public outreach. In the first area, we plan a field pilot test for NORM treatment and disposal technologies. The tests will attempt to reduce the costs of NORM disposal, now at $2000/barrel, down to about $300/barrel. This is a partnership procurement arrangement with industry. In the second area, independent monitoring and risk assessment of the new technology development, and quality assurance control, to secure credibility and public acceptance, will be carried out. In the third area, we will develop a model to demonstrate ways in which partnerships and public education can lead to informed decisions regarding low-risk NORM disposal operations.

The increased budget, and its' high priority in the program, is a direct reflection of the public, industrial and governmental concerns to address the NORM issue: The domestic petroleum industry, State and Federal agencies, and the public are all increasingly apprehensive over the rapid pace of development of regulations, their potential economic impact on this nations' resource base, and the lack of proper characterization and risk-based research data available for promulgating rational environmental compliance regulations. The Gas Research Institute recognizes NORM as a high priority environmental issue. The proposed activities address these concerns.

Question: What specifically do you propose to do in the area of environmental analysis associated with advanced concepts to process natural gas?

Answer: Advanced concepts to process natural gas include the chemical conversion of gas to higher value liquid products and upgrading of low quality gas. An example is the chemical conversion of butane to methyl tertiary butyl ether (MTBE). MTBE is an important additive in the preparation of reformulated fuels. The fiscal 1996 program will analyze this and similar processes and identify any associated environmental hazards. During the upgrading of low quality gas (for example, through the use of advanced membrane technology), pollutants such as sulfur oxides and hydrogen sulfide are removed. In FY 1996, systems analysis of the processes will be undertaken to identify the most cost-effective manner to manage these effluents.

Climate Change Action Plan

Question: You have proposed a new activity in the natural gas area, as part of the Climate Change Action Plan, to coordinate market entry efforts with the Defense Department and accelerate demonstrations of advanced fuel cells. Why does this effort cost $8 million for Fossil Energy? What amount is included in the Defense budget request for this effort?

Answer: The $8 million in the DOE Fossil Energy FY 1996 request is to initiate accelerated demonstrations of advanced fuel cell power plants to be cost shared by the private sector. Two accelerated demonstrations are envisioned with a total DOE funding of $20 million over several years. The balance of the accelerated demonstration costs (more than 50%) are expected from the private sector.

The Department of Energy is coordinating with the Defense Department on a Climate Change Action Plan activity to stimulate the Market Entry of early available fuel cells. This activity is funded by $18 million within the FY 1995 Defense Department appropriation, and does not involve DOE funding. No FY 1996 funding is requested by the Defense Department for either of these activities.

Phosphoric Acid Fuel Cells

Question: What is the status of the phosphoric acid fuel cell program? How successful has industry been in commercializing this product?

Answer: The Department completed funding of the phosphoric acid fuel cell program in 1992. The technology entered the commercial market in the 200 kilowatt size. The manufacturer has built and delivered nearly 60 units. More than 50 of these units are installed and operating. Even though the manufacturer accomplished major manufacturing cost reductions, high costs are a barrier to additional commercial sales because unit production rates are low.

Question: What types of applications use phosphoric acid fuel cells and how cost effective are they?

Answer: Phosphoric acid fuel cell power plants are currently used for on-site applications providing power for commercial operations. However manufacturing costs are high due to low production rates. This is expected to improve with a significant increase in production rates.

Question: How long is the "payback" for the higher initial purchase price?

Answer: There are a wide range of buyer situations and payback times involved. These units were sold as a private sector business transaction and buyers have not provided information to the government on payback times.

Molten Carbonate Fuel Cells

Question: At what stage is the molten carbonate fuel cell program and how long will it be before that technology is commercially available?

Answer: Full size cell stacks have been built and operated and the first integrated systems are being assembled in FY 1995 for operation in field test demonstrations which are to extend through FY 1996. These field test demonstrations will involve a 250 kW co-generation plant, manufactured by M-C Power, to be tested at the Miramar Naval Air Station in San Diego; and a 2 MW power plant, manufactured by Energy Research Corporation, to be tested in Santa Clara, California, supplying power to the municipal utility grid.

Both manufacturers project commercial availability before the year

2000.

Question: What types of applications are these fuel cell designed for?

Answer: The developers expect to apply molten carbonate fuel cells to distributed utility and industrial power generation and on-site co-generation for industrial and commercial applications.

Question: What advantages will molten carbonate fuel cells provide over traditional technology? How does that compare with phosphoric acid fuel cells?

Answer: Molten carbonate fuel cell power plants are projected to provide several advantages over other power plants of comparable size: higher efficiency -- 50% to 60% even in small sizes and simple systems; lower emission levels than any combustion power plant; lowest production of greenhouse gases; quiet operation and modular sizes. These advantages permit distributed and on-site operation which reduce power distribution costs and losses and in some applications will permit effective use of co-generated waste heat. The highly modular sizing and rapid installation capability also avoid tying up investment capital since generation capacity can more closely match load growth. Fuel cell power plants are projected to be cost competitive with traditional technology not offering these benefits. High reliability is expected. The reliability already being demonstrated by the market entry phosphoric acid 200 kW fuel cell power plants is exceeding the reliability of traditional technology.

The 200 kW market entry phosphoric acid fuel cell systems currently available operate at efficiencies of approximately 40% compared to the projected molten carbonate efficiencies of 50% to 60%. It appears that current phosphoric acid technology will be most competitive in fairly small powerplants of less than one megawatt while the molten carbonate is expected to be competitive in ranges up to tens of megawatts, and also for industrial applications requiring higher temperature process heat.

Tubular Solid Oxide Fuel Cells

Question: Fiscal year 1996 will be the last year of funding for the 5-year cost-shared cooperative agreement with Westinghouse for development of a tubular solid oxide fuel cell. Please describe this technology and explain how it differs from phosphoric acid and molten carbonate fuel cells.

Answer: Solid oxide fuel cells are made of ceramic materials designed to operate at high temperatures -- about 1800 F. The electrolyte is an oxide material that is a solid at operating temperature. No additional catalyst is required. The tubular cell geometry is similar to a laboratory test tube, open at one end and closed at the other, but the cells, at a meter or more, are much longer than a test tube. Fuel flows around the outside of the tubes and air flows on the inside. The tubular cells are bonded into rigid clusters known as bundles. A major advantage of the geometry is that tight high temperature seals between cells to retain the gases are not required. System efficiencies are expected to be 50 to 60 percent and higher in combined cycle operation.

Phosphoric acid fuel cells are made of up of rectangular graphite sheets of five to ten square feet. Unlike solid oxide fuel cells, the electrolyte is a liquid during operation. The cells are assembled into stacks with the number of cells in the stack dependent on the application. This type of cell operates at a much lower temperature -- about 400 F and requires tight seals within and between cells as well as edge seals to contain both the gases and liquid. Because of the low operating temperature, phosphoric acid fuel cells require a small amount of a precious metal catalyst. System efficiencies are about 40 percent.

Molten carbonate fuel cells are also rectangular and made of various materials such as stainless steel and nickel that can operate at a temperature in between those of solid oxide and phosphoric acid -- about 650 F. The electrolyte is a mixture of carbonates that is molten at operating temperature. No additional catalyst is required. Cells with areas as large as one square meter are stacked similar to phosphoric acid cells. Tight gas and liquid seals are also required by this concept. System efficiencies are expected to be 50 to 60 percent.

Question: What is the next step, beyond fiscal year 1996, for this program and what is the estimated cost?

Answer: The cooperative agreement for the tubular solid oxide fuel cell program end in FY 1996. As part of the Administration's reinvention of the Department, we are in the process of analyzing the direction of all applied research and development programs, including tubular solid oxide fuel cells. At the current time no firm outyear plans have been made. We do know that the next step in the development of tubular solid oxide fuel cells beyond FY 1996 is product improvement and cost reduction. We know that such an effort could include commerical demonstration of the major building blocks of a multi-megawatt system.

Question: How soon do you estimate that this technology will be commercially available and what advantages will it provide as compared with other fuel cell technology?

Answer: Tubular solid oxide fuel cell technology is estimated to reach market entry status in about the year 2000, but this will depend on the pace of research, development, and demonstration activities needed to support commercialization of the technology. This technology is projected to provide higher system efficiency than phosphoric acid systems and about the same as molten carbonate systems. Combined cycles using pressurized tubular solid oxide and gas turbines have even higher projected efficiencies of up to 70%. Environmental benefits are excellent as with the other fuel cell systems. System cost could be lower than either of the other technologies because of possible system specifications and cell materials are potentially lower cost. Solid oxide systems are expected to have a wider array of applications and sizes including use in large central power plants and co-generation of high temperature industrial process heat.

Planar Solid Oxide Fuel Cells

Question: What is the status of the planar solid oxide fuel cell program?

Answer: A competitive procurement resulted in selection of one prospective contractor (Institute of Gas Technology); negotiations are nearly complete; contract award is expected very soon with a 24 month performance period extending through FY 1966 funded with $1.7 million from FY 1995 appropriations. No funds have been requested in FY 1996.

Question: At what stage of development is this technology as compared with molten carbonate and tubular solid oxide fuel cells?

Answer: Planar solid oxide is at the laboratory cell and small stack stage of development with technical feasibility not yet proven; this compares to full scale commercial size components being tested and initial integrated power plants being assembled with molten carbonate and tubular solid oxide. Commercial market entry date of planar solid oxide is unknown and not expected to occur until after the year 2000. By constrast, market entry for molten carbonate and tubular solid oxide fuel cells is expected by the year 2000.

Question: How is this technology different from your other ongoing fuel cell programs and what are its advantages as compared with the others?

Answer: Planar solid oxide systems have projected power densities several times higher than molten carbonate or tubular solid oxide. The resulting projections of compact size, low costs, and rugged simple packages extend the applications of fuel cells. Attractive areas would include not only a greater range of utility uses but also portable and transportable power packages, heavy transportation and many more on-site and industrial uses.

Question: When do you estimate this technology will be commercially available?

Answer: Planar solid oxide systems are not expected to be commercially available until after the year 2000. If development activity is steady and largely successful, some developers expect that small units could be commercially available for some applications around the year 2005.

Historical and Outyear Costs of Fuel Cell Development

Question: For the record, please provide information by year on the cost of each of the fuel cell programs, including past expenditures and estimated costs in the future to achieve a commercially viable product.

Answer: The following chart shows government funding by year for each fuel cell technology since 1976.

ENACTED APPROPRIATIONS DOE/FE FUEL CELLS
($ IN THOUSANDS)

	FY 76	FY 77	FY 78	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
AR & TD	0	0	0	0	0	0	0	2000	4000	1910	1272	1350
Phosphoric Acid	3700	18050	30800	19500	23500(1)	21000	20640	17550	28800	28912	20355	15500
Molten Carbonate	0	1450	2200	1700	12000	9000	9600	7500	9200	8851	9932	7621
Advanced Concepts (Solid Oxide)	0	1500	2200	4000	0	2000	4224	5000	4600	3048	3770	4963
	3700	21000	35200	40500	35500	32000	34464	32050	46600	42721	35329	29434

	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 76 - 95
AR & TD	1547	1597	1458	1444	1,564	1,482	1,447	1,456	22,527
Phosphoric Acid	13200	9500	8291	8843	3,909	0	0	0	292,050
Molten Carbonate	11100	7069	16777	18413	28,628	30,945	32,298	29,983	269,567
Advanced Concepts (Solid Oxide)	8353	8368	11473	14160	16,671	18,701	18,033	18,143	149,740
	34200	26534	37999	42860(2)	50,772(3)	51,128(4)	51,778(5)	49,582	733,884

(1) Includes 9,500 transfer of fuel cell appropriations from conservation for the 40 KW on-site phosphoric acid program.

(2) After reprogramming of 30 in FY 91 by ASFE.

(3) After reprogramming of 533 to SBIR in FY 92

(4) Includes 684 for SBIR in FY 93

(5) Includes 689 for SBIR in FY 94

Estimated future costs below assume continued private sector cost-sharing levels. These estimated costs include product improvement and continued technical progress toward a commercial product.

Estimated Future Costs

Fuel Cell Technology	FY 96 Request	Projected Government Cost to Complete FY 96 through FY 99
Molten Carbonate	$30.1 million	$125 million
Solid Oxide Tubular	$15.9 million current contract	$75 million

Oil Technology

Exploration and Production Supporting Research

Question: You propose to initiate a new effort in reservoir characterization to set up a data repository. What amount of your $5,225,000 increase in oil exploration and production research is attributable to this new start?

Answer: $1,750,000 of the $5,225,000 is expected to be expended on the data repository. This is a cost-shared project between industry consortia ($862,000 or 33%) and government ($1,750,000 or 67%). The objectives of this project are to determine what data is in danger of being destroyed, to evaluate how the data should be preserved, and to standardize digital (computer) records to ensure access to the information by the public.

The DOE does not propose to operate repositories or build new repositories. The objective of the repository effort is to assist the existing repositories to acquire and incorporate into their collections the huge volume of irreplaceable geologic and engineering data that is likely to be destroyed as major oil companies divest themselves of data collections and move their activities internationally. This data is critical to the efficient exploration and field development efforts of the independent producers that are acquiring domestic petroleum operations.

Question: Please explain just what this data repository will include?

Answer: DOE is currently working with the American Geological Institute (AGI), a team of repositories, industry, and industry consortia to determine: the volume of data at risk of destruction, the cost and procedures for collecting and making accessible various types of data, and a prioritization procedure that will assure that only the most critical data is saved. Likely records to be preserved are core and cuttings geophysical data, geological maps, electric and other well log types, fluid properties data, and pressure transient data.

Question: What will be the cost in fiscal year 1997 if the committee were to agree to starting this data repository? What about the years beyond 1997?

Answer: DOE expects to assist the public repositories of cores, cuttings and digitized data to make it more accessible at multiple locations. The actual cost of providing this assistance is unknown at this time. DOE is currently working with the American Geological Institute (AGI), a team of repositories, industry, and industry consortia to determine: the volume of data at risk of destruction, the cost and procedures for collecting and making accessible various types of data, and a prioritization procedure that will assure that only the most critical data is saved. Once the AGI study is completed, DOE will be able to more accurately estimate this cost. For FY 1996, the proposed funding will be used to acquire the data and make it available for public use. Total DOE cost of starting these repositories will be $3.75 million ($1.75 million in FY 1996; $1.0 million in FY 1997; and $1.0 million in FY 1998). DOE will not be the permanent operator of the repositories. The facilities will probably not be "commerical" in the sense that they make a profit, but will become self sufficient beyond FY 1998 by changing a user fee.

Question: What other reservoir characterization projects are being expanded to get to the total proposed increase of $5,225,000?

Answer: The increase in reservoir characterization is $4,135,000. The $5,225,000 referred to above is the increase for of the Supporting Research subprogram. Reservoir characterization is just one element of Supporting Research. Of this $4,135,000, $1,750,000 is allocated for the data repository as discussed in the previous questions. The other significant increase is allocated for geoscience measurements activities. In FY 1995, geoscience was budgeted at $1.1 million, and increased to $2.9 million in FY 1996. This concentrated emphasis on geoscience measurements is designed to address the need for high-quality, high resolution exploration and production data. Technology areas addressed in this program include: seismic, wireline logging, well testing/tracer surveys, petrophysics and core analysis, electromagnetic/electric technologies for crosswell imaging, surface and subsurface geochemical technologies, rock mechanics, remote sensing, and field testing of new reservoir characterization tools and methods. This increased emphasis is in response to the recommendations included in the "Advanced Exploratory Research Directions for Extraction and Processing of Oil and Gas" report from the National Research Council (1993). The remaining $0.5 million increase is allocated for advanced heterogeneity characterization, including increased emphasis on fractured reservoirs.

Question: You propose to increase efforts for regional outreach in the technology transfer program to $2.5 million in fiscal year 1996. How does that compare with fiscal year 1995 funding and what exactly will you be doing in 1996 that you aren't doing now?

Answer: The FY 1995 funding for regional outreach is $700,000. This funding level has slowed the opening of the technology transfer regional centers, operated by the Petroleum Technology Transfer Council (PTTC). Consequently, only 2 to 4 regional centers will be opened in FY 1995, but we hope to expand to all 10 centers with the requested FY 1996 funds. These centers are particularly important to the independent producers, who will be able to use these resources to gain access to state-of-the-art technology through seminars, workshops, reference libraries, and on-line computer workstations to optimize their operations. In addition to the regional centers, this section of the technology transfer program includes funding for the Internet connections on the information superhighway to allow access to other computer systems such as: New Mexico Tech's GO-TECH and the Petroleum Technology Transfer Council (PTTC) computer networks. The DOE support of PTTC is scheduled to be concluded in FY 1999.

Question: There is an emphasis on increased funding for technology transfer in both the natural gas and oil areas; is there a corresponding proposal in the coal area? Please explain.

Answer: The budget for the Coal Program does not contain a corresponding request for funding for technology transfer. A review of the mechanism being used for technology transfer in the Oil Program has demonstrated that it would not be suitable for the Coal Program. This difference is primarily the result of the manner in which intellectual property is handled and the business practices used by the two industries. Efforts are underway to find a technology transfer process for the Coal Program that will be equally as successful.

Question: What new or expanded activities are assumed in your budget request for exploration and drilling research, what is the justification for each of these expansions or new starts, and how much will each of them cost in fiscal year 1996 as compared with fiscal year 1995?

Answer : Overall, the effort in the areas of exploration, drilling technology, and decision-based risk assessment has been increased by seven percent. The three new starts or changes in the direction of the 1996 program are:

1) A FY 1995 congressional mandate for the 50 percent cost-shared drilling and production research with the University of Tulsa was not repeated in the FY 1996 budget request, reducing the budget by $1.1 million.

2) Native American Projects: In response to the Energy Policy Act of 1992, and the Administration's policy guidance to assist the Native American Tribes in becoming energy self sufficient, we have applied our exploration research efforts to areas where tribal lands could be used for demonstration purposes. We developed a research implementation plan for FY 1996 that benefits several tribes that have energy resources, but have difficulties in resource management. The proposed plan includes: training in basic oilfield operations and environmental compliance, resource assessments and management plans, tribal data preservation (with the Bureau of Indian Affairs), new technology application and demonstrations (including use of the Rocky Mountain Oilfield Testing Center), and exploration assistance projects in underexplored or culturally sensitive tribal lands. This new request is for $1 million.

3) Basin analysis: This effort is in response to the Domestic Natural Gas and Oil Initiative (1993) and the recommendations included in the "Advanced Exploratory Research Directions for Extraction and Processing of Oil and Gas" report from the National Research Council (1993). This effort will focus the efforts to update and to increase the amount of publicly available information on the regional geology and hydrocarbon

prospects of the top priority basins, with the objective of improving the 20 percent success rate for U.S. wildcat drilling. The goal of the basin analysis project is to examine basins with high potential for oil and gas development, but with low drilling activity.

The first basin that was selected for study in FY 1995, is the Black Mesa Basin of northeastern Arizona. This basin lies on Navajo and Hopi tribal lands and for 30 years there has been no exploration activity in this area due to a moratorium by the tribes, which has been reversed.

The implementation plan calls for initiation of work on new basins each year. As work is completed in a basin, it will be dropped from the research, but the concepts which were developed will be applied to other underexplored basins through technology transfer. Our plans are to begin the second basin analysis in the Forest City/Salina Basin in Kansas and Oklahoma in FY 1996. The FY 1996 request is for $848,000. Industry cost share for this project is estimated to be 30 to 40 percent.

Recovery Field Demonstrations/Classes 1 through 5

Question: Funding for enhanced oil recovery field demonstrations is declining from $33,911,000 in fiscal year 1995 to $28,369,000 in fiscal year 1996. This program includes a multi-year, multi-project enhanced oil recovery program which is designed to be implemented in 5 classes, similar to the 5 rounds in the clean coal program and several new initiatives. The budget includes $3.1 million for completing Class 2 demonstration projects of enhanced oil recovery demonstrations. How do the eight projects in Class 2 differ from the Class 1 projects?

Answer: In the Field Demonstration program, each class targets a different set of domestic reservoirs with unique production problems and different operator populations. Each class is composed of a group of geologically similar reservoirs. The premise of the program is that successfully demonstrated technologies can be transferred and applied to other reservoirs within the same geological class with a higher probability of success than to reservoirs in other classes. This assures that a small number of demonstrations will influence adoption of technology in many reservoirs throughout the United States. The five classes were selected on the basis of their having the largest volumes of remaining oil, the greatest potential for additional recovery from advanced technology and the largest risk that large volumes of remaining oil will be abandoned in the near future.

There are a total of 22 reservoir classes. Each class has different production problems and is a target for different types of technologies. The ten currently active Class 2 projects differ from all other reservoir classes in targeting shallow-shelf carbonates, a group of reservoirs that were formed millions of years ago in shallow marine environments similar to today's Caribbean Sea. The reservoirs are found primarily in Texas, New Mexico, Kansas, Nebraska, Michigan, Montana, Utah, and North Dakota. Class 1 targets reservoirs formed in fluvial-dominated delta environments (the Mississippi River delta is a modern example). Class 1 reservoirs are found primarily in Colorado, Alabama, Wyoming, Utah, Kansas, Oklahoma, and Texas.

Question: How many projects will be funded in Class 3 and how do they differ from the previous classes?

Answer: In the Field Demonstration program, each class targets a different set of domestic reservoirs with unique production problems and different operator populations. Each class is composed of a group of geologically similar reservoirs. The premise of the program is that successfully demonstrated technologies can be transferred and applied to other reservoirs within the same geological class with a higher probability of success than to reservoirs in other classes. Nine projects have been competitively selected in Class 3. As with the other classes, projects include field demonstrations by industry for two types of technology: near term projects that seek to increase the application by small oil operators of commercial technologies that are underutilized and have the potential to prevent abandonments of marginal wells, and mid-term projects that are field trials of advanced technologies that aim to move the technologies to commercialization.

However, Class 3 targets Slope and Basin reservoirs that were formed when river-borne and near-shore debris washed into the deeper parts of ancient ocean basins. In addition to the geological differences between this class and the others, large volumes of heavy oil are produced from Class 3 reservoirs compared to the light oil produced in Class 1 and 2 projects.

Class 3 includes five near-term projects and four mid-term projects. The total Class 3 budget of $88 million includes $38 million DOE funding and $50 million in private or local-government funding. The awards are expected between March and July 1995. These reservoirs occur primarily in California, New Mexico, and Texas.

Question: How will you use the $7.2 million requested for Class 3 projects in fiscal year 1996?

Answer: All Class projects are divided into two budget periods for management control. The total DOE funding proposed for the nine Class 3 projects is $38 million. Of this amount, about $18 million is required for the first budget periods of the nine projects that start in FY 1995. The FY 1996 funds will be combined with remaining FY 1995 funds to support the second budget periods that start in FY 1996.

Question: What are the outyear costs associated with Class 3 projects?

Answer: Class 3 projects will require an additional $3.3 million in the outyear. This will complete the full $38 million DOE funding of the class.

Question: The budget also includes $6,050,000 for Class 4 and $50,000 for a feasibility study for Class 5. What would you do in those final two classes of projects that won't have been accomplished in the first three classes?

Answer: In the Field Demonstration program, each class targets a different set of domestic reservoirs with unique production problems and different operator populations. Each class is composed of a group of geologically similar reservoirs. The premise of the program is that successfully demonstrated technologies can be transferred and applied to other reservoirs within the same geological class with a higher probability of success than to reservoirs in other classes.

Class 4 will demonstrate technologies to recover additional oil from Strand-plain and Barrier Island reservoirs. These reservoirs formed by redistribution by marine processes (e.g., waves, tides, longshore currents) of sediments derived from terrigenous (land) sources. Reservoirs are located in Alabama, Arkansas, California, Colorado, Illinois, Kansas, Louisiana, Mississippi, Nebraska, New Mexico, Oklahoma, Pennsylvania, Texas, Utah, and Wyoming. Analyses by the DOE's Tertiary Oil Recovery Information System (TORIS) suggest that this reservoir class contains about 3 billion barrels of oil potentially recoverable at an oil price of $20 per barrel by application of advanced recovery technologies. Of this volume, almost 2 billion barrels are at risk of abandonment before the year 2000.

Class 5 demonstration projects will address the technologies applicable to Fluvial and Alluvial reservoirs. These reservoirs are formed by streams. These reservoirs occur in the Gulf Coast, Appalachian Basin, Illinois Basin, Rocky Mountains, Alaska, and the West Coast. The Tertiary Oil Recovery Information System (TORIS) analyses estimate that this reservoir class contains over 3 billion barrels of oil potentially recoverable at an oil price of $20 per barrel by application of advanced recovery technologies. Of this volume, almost 700 million barrels are at risk of abandonment before the year 2000.

Assessments of the impact of implementing advanced technologies nationwide suggest that Class 4 reservoirs could produce an additional 350,000 barrels of oil per day, resulting in $300 million additional Federal and State revenues each year. Class 5 reservoirs could provide 300,000 barrels per day of new oil and $260 million in new Federal and State revenues. These estimates assume an oil price of $20 per barrel.

Question: What are the outyear costs associated with Class 4 and with Class 5?

Answer: The estimated cost of the Class 4 effort is 30 million, of which $18.25 million would be required in the outyears, assuming that a Class 4 solicitation is issued in FY 1995.

The estimated cost of the Class 5 effort is $20 million, of which $15 million would be required in the outyears, assuming that a Class 5 solicitation is issued in FY 1996.

Recovery Field Demonstrations/New Initiatives

Question: You proposed a new start to assess and transfer the field results of the recovery field demonstrations. Why will this cost $3 million? What is the industry cost share?

Answer: This work consists of two sections. The industry improved oil recovery project analysis ($2 million) and technical and economic analysis of reservoir demonstration projects ($1 million).

The first part is to study industry projects outside our program to provide the Petroleum Technology Transfer Council with technology transfer modules, and to use this information to guide supporting research activities. Specific activities would include data gathering, domestic production impact analysis, and reservoir simulation. No further cost sharing is expected since we would be piggy-backing onto projects that have been funded 100 percent by industry including hundreds of millions of dollars spent for field work, facilities, chemicals, etc. However, these projects do not currently have any technology transfer activities associated with them.

The second part is to assess class projects for synergism and to provide the Petroleum Technology Transfer Council with technology transfer modules. Work included in the analysis of these projects will be data gathering and transmission, an update of our database runs to determine if the projected results were accomplished, and reservoir simulation. No further cost sharing is expected beyond the cost sharing in these field demonstration projects, which is currently at least $150 million (57 percent).

Question: Why does the government need to be involved in the assessment and transfer of this technology? Was this part of the original plan? Please explain.

Answer: Yes, this was part of the original plan, Oil Research Program Implementation Plan, April 1990, as well as the Oil Technology Transfer Plan: A Report to Congress, October 1993. In order to establish the maximum value for the program, detailed analyses must be conducted to enable DOE to transfer technology to those that can benefit. Thus, one demonstration project may effect hundreds of reservoirs and allow incremental production of millions of barrels of oil.

Question: Another proposed new activity involves spending $4,214,000 to increase production from marginal wells. What exactly will you do and why should the government be involved in this effort?

Answer: There are two sections of this activity: Reservoir Management Demonstration projects ($2,214,000) and Assistance to Independents with Urgent Production Problems ($2,000,000).

This activity would include working with a group of operators in a single unit or field to improve reservoir management techniques, as well as conducting small, cost-shared projects, proposed by industry, to improve marginal well production. This effort is aimed at independent producers, who do not have their own research and development departments, but who will play an ever increasing role in domestic production operations.

This program takes an active role in solving common production problems aimed at extending the economic life of the more than 500,000 marginal oil wells. These wells produce approximately 700 million barrels of oil equivalent per year, representing $10 billion of avoided imports each year according to the National Petroleum Council's Marginal Well Study, July 1994. When these wells reach their economic limit, they must be plugged in an environmentally sound manner including setting cement in the hole, removing the production equipment, restoring the land to its original contour and condition, and setting a permanent marker to locate the old wellbore. It is prohibitively expensive to re-equip these wells to recover the remaining oil. Plugging these wells removes the infrastructure for the wells, removes the entry to these reservoirs, and removes all hope of the State and Federal Government receiving future revenue.

In the United States, approximately one well is plugged every 30 minutes and jobs are lost at an alarming rate (450,000 of them since 1982). If we cannot slow this trend, imports will rise at an accelerated rate and more jobs will be lost. Our estimates are that an additional one-third of the oil could be recovered with advanced technology, but it has to be applied in the field, not in the laboratory.

Question: What would be the industry cost share for this new initiative on marginal wells?

Answer: Industry cost share for the Reservoir Management Demonstration projects and the Assistance to Independents with Urgent Production Problems will be a minimum of 50%.

Question: Please explain your heavy oil initiative in the Gulf of Mexico for which you have requested $2 million.

Answer: This work involves heavy oil field demonstrations in a region with available refining capacity. Although our current program includes several field projects in heavy oil reservoirs in California, there are no such projects targeting the heavy oil, unconsolidated Gulf Coast reservoirs. The production and reservoir data for the Gulf Coast heavy oil fields are sparse. However, it is estimated that one to two billion barrels of oil exist in these small to medium sized reservoirs. The cost share on these projects would be a minimum of 50%.

Testing New Technologies and Equipment at Naval Petroleum

Question: You have proposed to spend $2,480,000 to demonstrate, test and evaluate new technologies and equipment at the Naval Petroleum Reserve No. 3 (NPR-3). Why is this work needed and how will it affect the long-term viability of the Teapot Dome oilfield?

Answer: The value of a testing center such as the Rocky Mountain Oilfield Testing Center (RMOTC), located at Teapot Dome, is that it will allow new technologies to be field tested in the drilling, production, and environmental arenas prior to full scale deployment. This oilfield is the most widely characterized and studied field in the United States making it a model site for testing new equipment or recovery techniques. RMOTC also offers the opportunity for small businesses and independent oil producers who have limited resources to have easy access to field testing that is not readily available otherwise. It is proposed that training of independent operators and others such as Native American tribe members will also be part of this center.

Testing of several advanced and cost-cutting technology projects has been initiated as part of the routine operations at NPR-3. In addition, DOE's In-House Energy Management Program and the Energy-Related Inventions Program also utilize RMOTC. A total of 22 potential projects are being evaluated at this time as candidates for field testing if the funding is approved. These projects are combinations of smaller projects in the Energy-Related Inventions Program, industry sponsored projects cost-shared with the Department, and projects proposed to be tested by the Department's National Laboratories and Energy Technology Centers. A focus group composed of industry, Government, and academic representatives has been formed to guide this work. Also, a technical review panel composed of Government, National Laboratories, and academic personnel has been established to evaluate projects for consideration and action.

The proposed funding would be for the management and administration of activities; cost of the government's share of projects; engineering and operational support to direct, operate, and monitor projects and facilities used for testing; and technical, environmental, safety, quality assurance, and security support.

The long-term viability of this field will be positively affected by applying technologies that have been successfully demonstrated. Without the new ideas and products which will improve the economics of low production fields, this field and others like it will need to be plugged and abandoned--at considerable cost--thereby removing them from the domestic resource and tax base.

Exploration and Production/Environmental Research

Question: Funding for environmental research associated with oil exploration and production increase from $4,775,000 in fiscal year 1995 to $7,056,000 in the fiscal year 1996 budget request. Why is risk assessment funding increasing from $2,649,000 to $4,241,000?

Answer: The Environmental Protection Agency (EPA) is expected to promulgate new regulations for Underground Injection Control, that will allow for variances that could save the petroleum industry significant resources. For example, to meet EPA requirements for pre-1982 wells, the industry conservatively estimates a cost of $380 million. DOE is assisting States to develop and apply methodologies to obtain variances from the EPA requirements under the Safe Drinking Water Act. Variances apply in areas of low environmental risk, where injection of produced waters for enhanced recovery or disposal does not endanger underground sources of drinking water. The increased funding request is to accommodate the application of Area of Review variance methodology in Texas, Oklahoma, Kansas, California, Illinois, Pennsylvania, and New Mexico; and to partner with the Ground Water Protection Council to improve risk-based well data management capabilities for underground injection control.

Question: What new work will you be doing in produced water research and why is it needed?

Answer: We are now developing and will demonstrate, through a cost-shared arrangement with industry (industrial partner will carry 70% of cost), a technology to turn produced water into potable water. Instead of incurring disposal costs that range between $.10 to $1.00 per barrel, now the product potable water may turn out to be a potential revenue source for industry! We are also pursuing a competitive solicitation for low cost treatment and disposal technology for handling produced waters.

Processing Research and Downstream Operations

Question: Funding for oil processing research and downstream operations is proposed for $10 million as compared with $6,929,000 in fiscal year 1995 and $4,274,000 in fiscal year 1994. Why is pollution prevention research growing from $4,433,000 in fiscal year 1995 to $5,305,000 in fiscal year 1996? Please provide project level details for the record.

Answer: Pollutant prevention basic research is directed at understanding the basic nature of the chemical molecules in crude oil. Heavy crude oil and residuum contain more carbon, oxygen, sulfur, metals, nitrogen, and polycyclic compounds. Thermodynamic research underway provides insights into chemistry of pollutant compound formation and methods to prevent their formation. In addition, several innovative concepts are also being investigated. They include:

- Advanced Fluidized Bed technology applied to oil processing,
- Detailed characterizations for investigations of novel catalyst,
- Plasma fast quench reactor and submerged arc technology,
- Removal of nickel and vanadium by Liquid Exchange Reactions,
- Supercomputer simulation tools to design ebulated bed reactor,
- Separating metals from spent catalysts utilizing electrochemistry,
- On-line Magnetic Resonance, and
- Fouling Mitigation in Processing.

These innovative concepts are the result of industry enunciating fundamental needs and identifying National Laboratories that have unique capabilities and expertise. In FY 1996, it is planned to expand this area to accommodate increased industry concerns caused by the need to more severely process the heavier crude supply.

Question: Environmental compliance research was funded at $490,000 in fiscal year 1994 and $1,387,000 in fiscal year 1995. What new and expanded projects are assumed in your budget request for fiscal year 1996 which nearly doubles the funding to $2,670,000?

Answer: In FY 1995, the Department and the Petroleum Environmental Research Forum (PERF) (an organization of 28 oil companies) initiated joint cost-shared work on bioremediation techniques for oil refineries. During FY 1995, research will be directed at reviewing design criteria to clearly define key parameters and developing experimental procedures for addressing any areas of uncertainty. During FY 1996, all of the increase will be used to conduct these planned experiments and to address another area of major concern--meeting the requirements of the Clean Air Act Amendments of 1990.

Question: What are you doing in the area of mitigating the environmental constraints associated with the processing of heavy oil and why is that budget increasing from $913,000 in fiscal year 1995 to $1,945,000 in fiscal year 1996?

Answer: Our basic research effort in mitigating heavy oil environmental constraints focuses on using biotechnology to remove sulfur, nitrogen, and heavy metal compounds found in the heavy crude oil. The presence of these species makes processing very difficult and costly because of their potential environmental impact. In FY 1996, it is planned to start studying high-temperature fluidized-bed-conversion treatment for low-grade heavy oil feedstocks that will produce a better quality of liquids requiring significantly reduced hydrotreating. California Midway-Sunset crude will be tested to determine processing conditions necessary to achieve desired product quality, and to develop chemical agents that will remove nickel and vanadium contaminants found in heavy oil. Proposed agents for study (initially amino-carboxylate chelation compounds) will be used in pre-refining stages, for example, the desalter or in the crude distillation unit.

Question: What are your highest two priorities in all of these new and expanded projects for processing research and downstream operations and what would each of them cost in fiscal year 1996 and in each subsequent year?

Answer: The Petroleum Environmental Research Forum (PERF) efforts to bioremediate refineries and meet air act requirements and the prevention of pollutants from heavy crude oil are the two highest priorities for the expanded programs. As both activities are new efforts in the program, outyear funding, is any, will be based on reviews of progress and achievement toward program goals. If successful, the funding profile of these activities might be as follows:

	FY 1996	FY 1997 (funding in millions)	FY 1998	FY 1999
PERF	$1.5	$1.5	$1.5	$1.0
Pollution Prevention	$1.0	$1.0	$1.0	$1.0

Program Direction

Question: Why is headquarters program direction funding increasing in fiscal year 1996 while program direction funding at the energy technology centers in the field is decreasing by nearly $4 million?

Answer: The increase of program direction at Headquarters is due to contract services for electronic mail (E-Mail) and local area network (LAN) requirements. Also the DOE Office of Human Resources is assessing more for workstation support for LAN operations. FE Headquarters is dedicated to utilizing the information highway.

The decrease at the ETC's is mainly due to contract services. The budget for Fossil research and development is constrained, as are all budgets in the President's request. Because of these constraints each of us are being asked to do more with less and all participants in our Fossil research and development program will be facing a similar challenge in FY 1996.

Question: For the record please provide a location breakout of program direction funding for each non-headquarters facility and M&O contractor for fiscal years 1995 and 1996, along with an explanation of any changes.

Answer: The following chart shows a detailed listing by location of ETC Program Direction.

	($ in thousands) FY 1995	FY 1996	
Morgantown Energy Technology Center	$28,102	$21,461	(1)
Pittsburgh Energy Technology Center	26,904	22,963	(1)

Bartlesville Project Office (BPO)	3,366	3,284	
BPO M&O Contractor	0	7,705	(2)
Metairie Site Office	922	863	
	$59,294	$56,276	

(1) The budget for Fossil research and development is constrained, and because of these constraints each of us are being asked to do more with less.
(2) These overhead type funds were provided from the Oil Technology Program in FY 1995.

Question: What would be the impact of splitting the reduction in program direction funding between headquarters and the field?

Answer: The overall reduction in Program Direction is $2.4 million from FY 1995 to FY 1996. If Headquarters had to share in that reduction, the electronic mail (E-Mail) and local area network (LAN) requirements would be eliminated and there would be a reduction in technical and management support services.

Question: For the record, please provide a table showing the reductions that would be made if the program direction funding reduction were applied equally across the board.

Answer: If the overall reduction in Program Direction of $2.4 million from FY 1995 to FY 1996 were applied equally across the board, the following chart shows this reduction.

($ in thousands)

Program Activity	FY 1995 Enacted	FY 1996 Applied Equally Across the Board[1]	Reduction
Headquarters Program Direction			
Salaries and Benefits	$10,490	$10,147	$(343)
Travel	647	626	(21)
Contract Services	1,832	1,772	(60)
Subtotal, Headquarters Program Direction	$12,969	$12,545	$(484)
ETC Program Direction			
Salaries and Benefits	$26,460	$25,593	$(867)
Travel	1,491	1,442	(49)
Contract Services	31,343	30,317	(1,026)
Subtotal, ETC Program Direction	$59,294	$57,352	$(1,942)
Total, Program Direction and Management Support	$72,263	69,897	2,426

---

[1] Using FY 1995 as base.

Plant and Capital Equipment

Question: For the record please provide a project by project comparison of capital equipment and construction efforts in fiscal years 1995 and 1996, along with an explanation of any new starts.

Answer: The following chart shows a detailed comparison of capital equipment and construction for FY 1995 and FY 1996.

	($ in thousands) FY 1995	FY 1996
Capital Equipment		
Local Area Network	$300	$300
Equipment for ETC and BPO	476	501
Internet	0	900[1]
	$777	$1,701
Construction		
General Plant Projects	$1,994	$2,304
NIPER Facility Renovation	747	0
METC BLDG-B-4 Renovation	1,493	0
	$4,234	$2,304

Cooperative Research and Development

Question: What is the impact of eliminating all funding for cooperative research and development programs in fiscal year 1996?

Answer: Western Research Institute (WRI) and University of North Dakota Energy and Environmental Research Center (UNDEERC) will have to compete for fossil energy program funds through the competitive procurement process. Both institutions should be well positioned to do so. WRI and UNDEERC were defederalized almost a decade ago with the intent to put both on the path toward self-sufficiency. Both have developed excellent research capabilities and would probably fare well in competitive procurements. In these tight budget times, every attempt is being made to stay away from earmarking funds for specific institutions.

Question: What programs are currently funded at the Western Research Institute (WRI) and what will become of those efforts if the Federal government discontinues funding?

Answer: Both Base and Jointly-Sponsored Research (JSR) programs are currently funded in coal utilization, oil and gas recovery, energy efficiency, and environmental technology. The JSR Program funding is leveraged by private sector participation. The Base Program research is consistent with Fossil Energy's broad mission. Without directed funding from DOE, some JSR Program research may be discontinued. Funding for the Base Program will have to be sought through competitive procurements.

---

[1] Wordwide connection of computers to support information gathering and dissemination.

Question: What programs are currently funded at the University of North Dakota Energy and Environmental Research Center (UNDEERC) and what will happen to those programs if Federal funding is eliminated?

Answer: Both Base and Jointly-Sponsored Research (JSR) programs are currently funded in coal waste utilization/mitigation, air toxics measurement and control, natural gas production and upgrading, and small power systems applications. The JSR program has strong private sector support and probably will be sustained. Funding for the Base Program will have to be sought through competitive procurements.

Question: What cost-shared agreement do you have with the State of Illinois and what would it cost to continue that program in fiscal year 1996?

Answer: The cost-shared Cooperative Agreement with the State of Illinois is in Support of High Sulfur Coal Research. The estimated cost to continue the program in FY 1996 is $500,000.

Question: For the record please provide a listing of all the projects funded under the cooperative research and development program in fiscal year 1995, the cost of each project and the location of each effort (WRI, UNDEERC, etc.).

Answer: The following table provides the requested information.

UNDEERC JSR Cooperative Agreement Tasks for FY 95
Contract No. DE-FC21-93MC30098

Task #	Title	Planned FY 95 DOE Funding	Location
15	Process Development Unit Test Program for Thermally-Recycled Plastics	$ 135,000	UNDEERC Grand Forks, ND
17	Enhanced Air Toxics Control	$ 139,090	UNDEERC Grand Forks, ND
18	Coal Ash Resources Research Consortium 1994-1995 Research	$ 60,000	UNDEERC Grand Forks, ND
21	Sour Gas Plant Remediation Technology Research and Demonstration Project	$ 167,000	UNDEERC Grand Forks, ND
23	Gas Industry Groundwater Research Program	$ 117,000	UNDEERC Grand Forks, ND
28	An Assessment of the Subsurface Fate of Monoethanolamine at Sour Gas Processing Plant Sites	$ 60,000	UNDEERC Grand Forks, ND
30	Hot-Gas Filter Ash Characterization Project	$ 290,000	UNDEERC Grand Forks, ND
31	Formal Evaluation of Flue Gas Chemical Measurement Methods: Phase 1--Verification of Mercury Speciation by EPA (Draft) Method 29	$ 422,458	UNDEERC Grand Forks, ND
32	Organic Sulfur Removal from Coal with Super- and Subcritical Water	$ 100,000	UNDEERC Grand Forks, ND
35	Evaluation of Field Analytical Techniques for Mercury in Soil	$ 40,000	UNDEERC Grand Forks, ND
36	Combustion Characterization of Carbonized Refuse-Derived Fuel from Temperature Optimization Tests	$ 25,000	UNDEERC Grand Forks, ND
37	Recent Advances in Research on Ash Deposition in Utility Boilers: Practical Applications for the Electric Power and Coal Industries	$ 60,331	UNDEERC Grand Forks, ND

Task #	Title	Planned FY 95 DOE Funding	Location
38	Mercury Remediation Technology Research and Demonstration	$ 40,000	UNDEERC Grand Forks, ND
39	Preparation and Gasification of Coal-Water Fuel	$ 49,771	UNDEERC Grand Forks, ND
40	Mercury Sorbent Evaluation	$ 60,350	UNDEERC Grand Forks, ND
41	Combustion Characterization of Carbonized Refuse-Derived Fuel from Temperature Optimization Tests--Part 2	$ 175,000	UNDEERC Grand Forks, ND
42	Coke Evaluation and Development of a Tailored-Form Coke for the Foundry Industry	$ 47,000	UNDEERC Grand Forks, ND
43	Coal Ash Behavior in Reducing Environments II	$ 100,000	UNDEERC Grand Forks, ND
44	Mitigation of Ash Deposition at the MDU Coyote Station	$ 152,000	UNDEERC Grand Forks, ND
45	Naturally-Occurring Radioactive Materials Related Research for the Natural Gas Industry	$ 78,000	UNDEERC Grand Forks, ND
46	Utilization of Petroleum Coke for Power Production	$ 200,000	UNDEERC Grand Forks, ND
47	Industrial Application of the PCGC-2 and -3: Practical Applications for the Electric Power and Coal Industries	$ 80,000	UNDEERC Grand Forks, ND
	TOTAL	$ 2,598,000	

UNDEERC Base Cooperative Agreement Tasks for FY 95
Contract No. DE-FC21-93MC30097

Task #	Title	FY 95 Funding	Location
1.7	Hot-Water Extraction of Organics, Metals, and Halogens from Coal and Contaminated Soils	$ 97,680	UNDEERC, Grand Forks, ND
1.10	Biodesulfurization	$ 97,680	UNDEERC, Grand Forks, ND
1.11	Spectroscopic Field Screening of Hazardous Wastes and Toxic Spills	$ 97,680	UNDEERC, Grand Forks, ND
3.11	Fuel Quality Advisor	$ 244,200	UNDEERC, Grand Forks, ND
3.12	Small Power Systems	$ 288,156	UNDEERC, Grand Forks, ND
5.10	Value-Added Carbon	$ 122,100	UNDEERC, Grand Forks,ND
6.3	Engineering Performance of Advanced Structural Materials	$ 122,100	UNDEERC, Grand Forks, ND
6.4	Use of Coal Ash in Ceramics	$ 48,840	UNDEERC, Grand Forks, ND
6.5	Materials for Gas Separation and Hot-Gas Cleanup	$ 73,260	UNDEERC, Grand Forks, ND
7.1	Strategic Planning	$ 29,304	UNDEERC, Grand Forks, ND
	TOTAL	$1,221,000	

WRI JSR Cooperative Agreement Tasks for FY 95
Contract No. DE-FC21-93MC30127

Task #	Title	Planned FY 95 DOE Funding	Location
1	Downhole Steam Generator	$ 323,000	WRI Laramie, WY
2	Wetting Behavior	$ 463,729	WRI Laramie, WY
6	Enhanced Recovery of Coalbed Methane	$ 323,261	WRI Laramie, WY and New Mexico
8	Chemical Sensor	$ 247,761	WRI Laramie, WY
11	PFBC Ash Use	$ 147,640	WRI Laramie, WY
16	Wood-Fired Gas Turbine	$ 742,800	WRI Laramie, WY
17	Solid-State NMR Analysis of Mowry Formation Shale	$ 30,000	WRI Laramie, WY
18	Acid-Mine Drainage Prevention	$ 91,403	WRI Laramie, WY and Montana
19	PERF (Petroleum Environmental Research Forum) Dispersion Modeling	$ 502,124	Nevada
	TOTAL	$2,871,718	

WRI Base Cooperative Agreement Tasks for FY 95
Contract No. DE-FC21-93MC30126

Task #	Title	Planned FY 95 DOE Funding	Location
1.2	Miscible-Immiscible Gas Injection Processes	$250,500	WRI Laramie, WY
3.1	Solid Waste Management	$140,500	WRI Laramie, WY
3.2	Remediation of Contaminated Soils	$163,500	WRI Laramie, WY
3.3	The Syn-Ag Process: Coal Combustion Ash Management Option	$ 90,500	WRI Laramie, WY
3.4	The Maxi-Acid Process: In Situ Amelioration of Acid Mine Drainage	$165,500	WRI Laramie, WY
4.1	Heavy Oils/Waste Plastics Co-Processing	$165,500	WRI Laramie, WY
	TOTAL	$976,000	

State of Illinois Projects
Awarded in FY94 - Performed in FY95

Proposal Title	Cost (Ill.-53.8% DOE-46.2%)	Performing Organization	Location
Coal Preparation			
A Fine Coal Circuitry Study Using Column Flotation and Gravity Separation	97,693	Southern Ill. Univ. (SIUC)	Carbondale, Ill.
Ultrafine Coal Single Stage Dewatering and Briquetting Process	85,203	UM-Rolla	Rolla, MO
Production of a Pellet Fuel From Illinois Coat Fines	66,140	Ill. State Geologic Survey (ISGS)	Urbana-Champaign, Ill.
Advanced Physical Coal Cleaning to Comply with Potential Air Toxics Regulations	78,574	SIUC	Carbondale, Ill.
Desulfurization of Coal with Hydroperoxides of Vegetable Oils	49,959	SIUC	Carbondale, Ill.
Advanced Characterization of Firms of Chlorine Organic Sulfur and Trace Elements in Available Coals from Operating Illinois Mines	104,356	ISGS	Urbana-Champaign, Ill.
Gas Cleanup			
Composition Modification of Zinc Titanate Sorbents for Hot Gas Desulfurization	153,371	SIUC	Carbondale, Ill.
Novel Technologies for SO_x/NO_x Removal from Flue Gas	179,641	NorthWestern Univ. (NU)	Evenston, Ill.
Combined Removal of SO_x and NO_x from Flue Gas Using Non-Thermal Plasma	59,391	SIUC	Carbondale, Ill.

Proposal Title	Cost (Ill.-53.8% DOE-46.2%)	Performing Organization	Location
Gas Cleanup (Continued)			
Catalytic Reduction of SO_2 with Methane over Molybedenum Catalyst	52,935	SIUC	Carbondale, Ill.
Production and Use of Activated Char for Combined SO_2/NO_x Removal	101,196	ISGS	Urbana-Champaign, Ill.
Coal Related Wastes Management			
Production of Inorganic Pellet Binders from Fly Ash	85,273	Mich. Tech. Univ. (MTU)	Houghton, MI
Design and Fabriction of Advanced Materials from Illinois Coal Wastes	77,310	SIUC	Carbondale, Ill.
A Field Demonstration Project Utilizing FBC/PCC Residues for Paving Materials	77,234	SIUC	Carbondale, Ill.
Brick Manufacturer with Fly Ash from Illinois Coals	58,401	ISGS	Urbana-Champaign, Ill.
Lightweight Combustion Residues-Based Structural Materials for Use in Mines	99,772	SIUC	Carbondale, Ill.
Manufacture of Ammonium Sulfate Fertilizer from FGD-Gypsum	85,308	ISGS	Urbana-Champaign, Ill.
Near-Neutral Oxidation of Pyrite in Coal Slurry Solids	42,111	ISGS	Urbana-Champaign, Ill.

Proposal Title	Cost (Ill.-53.8% DOE-46.2%)	Performing Organization	Location
Coal Conversion			
Production of Low-Sulfur Binder Pitch from High-Sulfur Illinois Coals	126,490	Inst. of Gas Tech. (IGT)	Des Plaines, Ill.
Novel Carbons from Illinois Coal for Natural Gas Storage	49,376	ISGS	Urbana-Champaign, Ill.
Preliminary Evaluation of Resinite Recover from Illinois Coals	49,957	SIUC	Carbondale, Ill.
Combustion			
Sulfur Removal in Advance Two Stage Pressurized Fluidized Bed Combustion	119,184	IGT	Des Plaines, Ill.
Combustion of Char-Coal Waste Pellets for High Efficiency and Low NO_x	66,112	SIUC	Carbondale, Ill.
Pilot Plant testing of Illinois Coal for Blast Furnace Inject	99,803	SIUC	Carbondale, Ill.
TOTAL	2,064,790		

Fossil Energy Environmental Restoration

Question: The environmental restoration program is proposed to increase from $16,431,000 in fiscal year 1995 to $18,919,000 in fiscal year 1996. After you take out the one-time environmental funding associated with the closeout of the MHD program in 1995, the increase is $6,189,000. Why is funding for remedial actions under Comprehensive Response, Compensation and Liability Act of 1980 (CERCLA) increasing by nearly 100% in fiscal year 1996?

Answer: The majority of remedial actions have been in the less costly, initial phases of cleanup consisting of: (1) site characterization to determine the nature and extent of contamination; (2) interim remedial action to prevent additional migration of contamination offsite; and (3) development of cleanup alternatives acceptable to the federal and state environmental regulatory agencies. The increase in the FY 1996 budget request is required to move these activities from the initial study and limited remedial action phase to the more resource intensive permanent cleanup phase.

Additional contaminated sites are also being identified that require environmental characterization and may require cleanup, resulting in increases in the budget request for CERCLA funding in FY 1996.

Question: Could some of these CERCLA remedial actions be deferred until fiscal year 1997 or funded under a stretched out schedule? If so, which ones and how much would the funding profile change?

Answer: In general, additional delays in funding the CERCLA remedial actions could result in: (1) the expansion of the extent of contamination through groundwater migration, resulting in increased costs of remediation, additional risks to human health and the environment, and the potential for negative response by the public; and (2) the violation of cleanup schedules and agreements with the Federal/state environmental regulatory agencies. For example the State of Wyoming has issued a notice of violation against DOE and indicated that enforcement actions, due to delays in cleanup, will increase the costs further. The state can fine DOE $25,000/day/chemical for the current violation of Wyoming's water quality standards. The fines and penalties could offset any potential budget reductions in FY 1996.

Since the submission of the FY 1996 budget request, additional sites have been identified that will require funding. For example, hazardous wastes from the Institute of Gas Technology (IGT)/Hydrogen Gasification project, funded by DOE, has contributed to the soil and groundwater contamination at a Superfund Site in Illinois. EPA has identified several potentially responsible parties including IGT/DOE. Approximately $1 million will be required to satisfy the DOE/FE liability for the cleanup.

Question: What are the criteria for funding projects under the category "other environment, safety and health actions" and why is this program increasing from $5,978,000 in fiscal year 1995 to $8,605,000 in fiscal year 1996?

Answer: The "other environment, safety and health actions" include costs associated with activities undertaken in response to compliance with federal, state and local environment, safety and health requirements, other than RCRA and CERCLA. Program costs have increased in response to recent inspections of the Morgantown Energy Technology Center, the Pittsburgh Energy Technology Center, and the Bartlesville Project Office that have identified significant compliance deficiencies. The major share of the funding increase is associated with industrial safety, fire protection, emergency preparedness and protection of water quality.

Question: Could some of these other safety and health actions be funded under a stretched out schedule? If so, which ones, and how would the funding profile change?

Answer: Reduction in funding levels in FY 1996 would result in increased risk to workers, the public and the environment. For example, activities such as upgrading site-wide fire alarm systems to OSHA standards, and complying with OSHA industrial hygiene requriements would be delayed. The reductions could also result in an increased possibility of Federal, State and local penalties and fines for noncompliance with ES&H requirements due to lack of response by DOE to known compliance deficiencies. In addition, individuals with responsibility for ES&H compliance could be held criminally liable for compliance deficiencies.

The FY 1996 request addresses deficiencies that pose a high priority risk to worker and public health and safety, and the environment. Funds for actions to address other, lower risk ES&H compliance deficiencies, projected to cost approximately $50 million, have been deferred until beyond FY 1996.

Question: Do any of these environmental restoration projects have large outyear costs? Please provide details for the record?

Based on environment, safety and health compliance audits of the Morgantown Energy Technology Center, the Pittsburgh Energy Technology Center, and the Bartlesville Project Office, an additional approximately $50 million in onsite project costs have been identified beyond the FY 1996 funding request. In addition, CERCLA remediation costs for offsite locations could increase as additional cleanup sites are identified through site environmental characterization studies that will be completed in FY 1995 and FY 1996. For the existing CERCLA sites already included in the FY 1996 budget request, outyear costs, at a minimum, will exceed $4.5 million.

Use of Prior Year Balances

Question: What projects will be affected by your proposal to use $6.5 million in prior year balances to partially offset your budget requirements for fiscal year 1996?

Answer: What we have done thus far is identify the amount of the offset which is to be taken at each of our site offices, METC, PETC, and

BPO. This assessment was based on the unobligated balances by site at the end of FY 1994. We have not to date identified the specific projects which will be affected. As soon as this list is available we intend to provide the committee a detailed list for your review and approval.

Question: Please provide project-by-project explanations and savings estimates for the record.

Answer: As discussed in our previous response, we have not to date identified the specific projects which will be affected from the FY 1996 offset. We will be developing a detailed list later this fiscal year and will be more than happy to provide this list to the committee.

Project Reductions, Eliminations, Increases and New Starts

Question: For each project you propose to eliminate or reduce in fiscal year 1996; please provide details for the record on what the project is designed to do: where it is located; the contractor(s) performing the work; why it is proposed for elimination or reduction; what it would cost to continue the project on schedule in fiscal year 1996; and what the outyear costs by year, beyond fiscal year 1996, would likely be.

Answer: The following projects are proposed for elimination or reduction in the FY 1996 budget request. The Department is currently evaluating its applied research and development programs, including Fossil Energy R&D as part of the Administration's initiative to reinvent Government. The Department's goal is to achieve savings of $1.2 billion over five years in applied Research and Development. Until this assessment is complete, the outyear costs for the fossil projects listed below are not available.

Advanced Clean Fuels Research

High Efficiency Processors (HEP)

Project Description: HEP are fine coal cleaning and handling systems with near commercialization prospects designed to produce coal fuel with 60 percent pyritic sulfur reduction and ash content of no more than 8 percent.

Reason for Reduction/Termination: These three projects represent valuable research but given the restrictions on FY 1996 Fossil Energy funds and that these technologies are near to commercialization, these activities were given a lower priority. In FY 1996, zero funding is requested.

Location of Research Being Reduced/Terminated: Alberta Research Council, Devon, Alberta, Canada; Control International Inc., Salt Lake City, Utah; Virginia Polytechnic Institute, Blacksburg, Va.

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$900

Advanced Research and Environmental Technology

Project Description: B&W Air Toxics Test Facility - The facility will be used to develop cost effective strategies for controlling air toxics emissions from coal fired power plants.

Reason for Reduction/Termination: The air toxics field test program has shown wide variations in mercury capture. In view of strict budget limitations, it was decided that additional field testing of mercury emissions was a higher priority than the lab-scale control technology work at the B&W facility. It was deemed higher priority to identify and characterize the pollutants before starting to develop controls.

Location of Research Being Reduced/Terminated: Babcock & Wilcox, Alliance, OH

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

Air Toxics and Super Clean Systems

Project Description: The purpose of these projects is to address the needs of the utility industry in dealing with the more stringent requirements of the Clean Air Act Amendments of 1990 pertaining to SO_2 and NO_x cleanup requirements and the yet to be defined air toxics regulations. Funding was requested in the amounts estimated to be necessary to do the work scheduled and is not indicative of any change in the status of these two phased efforts, the first phase of which will completed in two years. This will be followed by a down-selection process and an additional 30 month period of development. The first phase has been provided for in current and prior year requests.

Reason for Reduction/Termination: Funds requested are adequate to keep the first phase on schedule.

Location of Research Being Reduced/Terminated: To be determined.

Funding Required to Conduct Originally Planned Program in FY 1996:
($ in thousands)

FY 1996
$2,100

Core Advanced Research (formerly Coal Liquefaction Advanced Research

Project Name: Advanced Research and Environmental Technology

(AR&ET) (formerly Coal Liquefaction Advanced Research)

Project Description: This program conducts a core research activity in coal conversion science, catalysis, and environmental research focused on enabling science and technology for achieving economically attractive and environmentally acceptable production of liquid fuels from coal. In FY 1995 the program was reduced by eliminating industrial contracts and reducing activity at National Laboratories.

Work Being Reduced/Terminated: In FY 1995 the activity includes a 50 percent cost-shared cooperative agreement with the university-based Consortia for Fossil Fuel Liquefaction Science (CFFLS) consisting of Auburn University, University of Pittsburgh, University of Kentucky, University of Utah, and West Virginia University; a coal sample bank and associated support project at Penn State University; and an in-house activity at the Pittsburgh Energy Technology Center focusing on coal-waste coprocessing.

In FY 1996 these three projects will be terminated.

Reason For Reduction/Termination: Funds are not being requested for these activities in view of the need for overall fiscal restraint.

Location of Research Being Reduced/Terminated:

CFFLS
University of Kentucky, Lexington, KY
University of Utah, Provo, Utah
Auburn University, Auburn, Alabama
University of Pittsburgh, Pittsburgh, PA
West Virginia University, Morgantown, WVA

Other
Penn State University, University Park, PA
Pittsburgh Energy Technology Center, Pittsburgh, PA
Sandia National Laboratory, Albuquerque, NM

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996

$6,000

Advanced Clean/Efficient Power Systems

Advanced Pulverized Coal-Fired Powerplant

Project Description: Low Emission Boiler System (LEBS) - The LEBS is an integrated power system using near-term technologies designed to reduce SO_2 and NO_x emissions to 1/6 NSPS with an efficiency of 42 percent and a cost of electricity comparable to plants meeting NSPS.

Reason for Reduction/Termination: Budget constraints preclude funding all three contractors. Sufficient funds are requested in FY 1996 ($5.0 million) to continue with one contractor.

Location of Research Being Reduced/Terminated: ASEA Brown Boveri, and Babcock & Wilcox, Alliance, OH; Riley Stoker, Windsor, CT.

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$6,300

Advanced Research and Environmental Technology

Project Name: Advanced Research portion formerly Combustion Systems Advanced Research, Control Technology and Coal Preparation Advanced Research and Surface Coal Gasification Advanced Research

Project Description: These three subprogram activities address crosscutting enabling science and technology for advanced power systems, and exploratory research on novel, high-risk concepts for removing constraints to achieving the high efficiency and high environmental performance goals of the Clean Power Systems R&D Program.

Work Being Reduced/Terminated: In FY 1995, the subprogram included a new, focused initiative to address high priority research topics critical to achieving the goals of Combustion 2000 systems being developed through the Pittsburgh Energy Technology Center. This includes projects to develop design tools to enable prediction of ash/slag impacts on high temperature heat transfer components and system integration methods to enable Combustion 2000 Power Systems to meet efficiency and cost objectives. The projects initiated include Physical Sciences, Inc., Pennsylvania State University, Massachusetts Institute of Technology, Reaction Engineering International, and the Advanced Combustion Engineering Research Center at the University of Utah.

In FY 1996, this initiative will be terminated.

Reasons for Reduction/Terminations: Funds are not requested for this activity in view of the need for overall fiscal restraint.

Location of Research Being Reduced/Terminated:
Physical Sciences, Inc. Andover, MA
Penn State University, University Park, PA
Massachusetts Institute of Technology, Cambridge, MA
Reaction Engineering International, Salt Lake City, Utah
University of Utah, Provo, Utah

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$2,600

Advanced Research and Technology Development (AR&TD)

Project Name: AR&TD Components

Project Description: This program consists of a core research activity and a focused application research activity directed at developing computational fluid dynamics design and predictive tools and techniques for heavily solids-laden granular flows in advanced coal-based systems, referred to as the Granular Flow Advanced Research Objective (GFARO).

Work Being Reduced/Terminated: In FY 1995 the GFARO activity was substantially reduced, thereby stretching out the time to achieve expected accomplishment of the objective.

In FY 1996 the GFARO will be terminated. Termination includes discontinuation of funding at ANL, SNL, LLNL, University of Pittsburgh, Cornell University, University of Florida, New Jersey Institute of Technology, and Worchester Polytechnic Institute.

Reason for Reduction/Termination: Funding is not requested for these activities in view of the need for overall fiscal restraint.

Location of Research Being Reduced/Terminated:

Argonne National Laboratory, Chicago, IL
Sandia National Laboratory, Albuquerque, NM
Lawrence Livermore National Laboratory, Livermore, CA
University of Pittsburgh, Pittsburgh, PA
Cornell University, Ithaca, NY
University of Florida, Gainesville, FL
New Jersey Institute of Technology, Newark, NJ
Worchester Polytechnic Institute, Worchester, MA

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$1,800

Project Name: AR&TD Instrumentation and Diagnostics (I&D)

Project Description: This program focuses upon applying state-of-the-art advances in I&D to the solution of problems in fossil advanced systems development.

Work Being Reduced/Terminated: In FY 1996 projects at Ames Laboratory (AML) on surface contour mapping and at Argonne National Laboratory on instrumentation research will be terminated and other activities will be reduced.

Reason for Reduction/Termination: Funding is not requested for these activities in view of the need for overall fiscal restraint.

Location of Research Being Reduced/Terminated:
Ames Laboratory, Ames, Iowa
Argonne National Laboratory, Chicago, IL
Morgantown Energy Technology Center, Morgantown, WVA

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$970

Project Name: AR&TD Bioprocessing of Coal

Project Description: FY 1995 Program consists of a core research activity conducted at two National Laboratories (ORNL and INEL) and universities, plus three cost-shared collaborative projects between three National Laboratories and industrial partners.

Work Being Reduced/Terminated: In FY 1996, the core research activity will be reduced and two of the three industry collaborative projects will be terminated. The decision of which one to retain will be based upon a review to be conducted during FY 1995.

Reason for Reduction/Termination: Funding is not being requested to continue these efforts, due to the need for overall fiscal restraint.

Location of Research Being Reduced/Terminated:

Oak Ridge National Laboratory - Oak Ridge, TN
Idaho National Engineering Laboratory, Idaho Falls, ID
National Renewable Energy Laboratory, Golden, COL

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$1,950

Project Name: AR&TD Materials

Project Description: The AR&TD cross cutting materials research program provides development of high temperature corrosion resistant structural alloys, ceramic composites, coatings and functional materials for advanced Fossil Energy systems.

Work Being Reduced/Terminated: In FY 1994 a $2,000K initiative was undertaken to accelerate the development of high temperature, corrosion-resistant materials (ceramic composites and alloys) to meet the needs of advanced high efficiency coal-based combined cycle power generation systems and the initiation of a coal-derived carbon products development program. This initiative entailed accelerated R&D on ceramic and metallic corrosion protection coatings, and the testing and evaluation of mechanical and corrosion properties of these materials when used in advanced coal power systems applications such as hot gas particulate cleanup, and in heat transfer components.

In FY 1995 funding for this initiative was reduced to $1,000K and the schedule for completion of the initiative objectives was extended.

In FY 1996 it is proposed that this initiative will be terminated. Activities to be terminated include high temperature coatings, a filter development and several materials/applications environmental/characterization projects at Argonne National Laboratory (ANL), Penn State University, UNDEERC, Oak Ridge National Laboratory (ORNL), and Lawrence Berkeley Laboratory. In addition, ceramic coatings and ceramic corrosion evaluation projects at ANL, Boston University and ORNL will be reduced. The cost-shared coal-derived carbon products partnership development program at West Virginia University, UCAR Carbon Company, Koppers Industries, Alcoa, Amoco Specialty Products, Fibre Materials Inc., and ORNL will be terminated.

Reason for Reduction/Termination: Funds are not requested for these activities due to the need for overall fiscal restraint.

Location of Research Being Reduced/Terminated:

High Temperature Materials
Argonne National Laboratory, Argonne, Ill.
Penn State University, University Park, PA
University of North Dakota
Energy and Environment
Research Center, Grand Forks, ND
Oak Ridge National Laboratory, Oak Ridge, TN
Lawrence Livermore National Laboratory, Berkeley, CA
Boston University, Boston, MA

Carbon Products Consortia
West Virginia University, Morgantown, WVA
UCAR Carbon Company, Inc., Parma, OH
Koppers Industries, Inc., Pittsburgh, PA
Alcoa, Pittsburgh, PA
Fiber Materials Inc., Biddeford, ME
Amoco Performance Products, Inc., Alpharetta, GA
Oak Ridge National Laboratory, Oak Ridge, TN

Total Funding Required to Conduct Originally Planned Program in FY 1996: ($ in thousands)

High Temperature Materials Activity Initiative:

FY 1996
$8,950

Carbon Products Consortia:

FY 1996
$10,450

Natural Gas Research

Utilization

Project Description: Gas-to-Liquids Research - This program has been refocused from a fully basic research-oriented effort to a more balanced basic and applied effort: examining prospects that have surfaced in Alaska, the Gulf of Mexico and other remote areas where conversion of gas to transportable liquid form have clear potentials; furthering the development of breakthrough technologies of gas conversion on a cost-shared basis with industry; and supporting the most promising basic research.

Work Being Reduced/Terminated:

Enhancement of Methane Conversion Using Electric Fields - This project was contracted at the request of the Congress. Its purpose is to expand the state of knowledge in this area of direct conversion of methane to higher value liquid hydrocarbons.

Catalyst Studies for Methane Oxidative Coupling Reactions - This project has been extended ten years, beginning first with Coal Gasification where catalyst exploration studies were initiated. Gas-to-Liquids then assumed the effort to follow up on possibilities in direct gas chemical conversion. While some prospects for longer life catalysts have been found, little progress in achieving major gains in efficiency (and direct conversion economics) is anticipated from continuation of this work.

Direct Conversion of Methane to Higher Hydrocarbons - This project has extended six years with work directed to exploration of biological chemistry of converting methane to liquids using enzyme approaches. While the work has provided some advances, the program believes better payoff potentials lie in other basic research areas. Industry interest has diminished in this avenue of gas conversion.

Reason for Reduction/Termination: Funds available for basic studies have been allocated to more promising areas.

Location of Research Being Reduced/Terminated:
Methane Conversion - Oklahoma University, Norman, Oklahoma
Catalyst Studies - Lawrence Berkeley National Laboratory, Berkeley, California
Direct Conversion of Methane - Lawrence Livermore National Laboratory, Livermore, California

Total Funding Required to Conduct Originally Planned Program in FY 1996 and Outyears: ($ in thousands)

FY 1996

Fuel Cells

Advanced Research

Program Description: Advanced research on electrodes, cell interconnects, electrolytes, seals, and materials

Work be Reduced/Terminated: Fundamental research on electrodes, cell interconnects, electrolytes, seals, and materials

Reason for Reduction/Termination: Reduce effort due to budget constraints

Location of Research Being Reduced/Terminated:

Argonne National Laboratory, Argonne, Illinois
Pacific Northwest Laboratory, Richland, Washington

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$1,456

Planar Solid Oxide Fuel Concept

Program Description: Development of Planar Solid Oxide Fuel Concept

Work Being Reduced/Terminated: Development of Planar Solid Oxide Fuel Concept

Reason for Reduction/Termination: Budget constraints in current and future years

Location of Research Being Reduced/Terminated: Illinois (in negotiation with Institute of Gas Technology)

Funding Required to Conduct Originally Planned Program in FY 1996:

($ in thousands)

FY 1996
$2,000

Question: For each existing project which has increased funding requested in fiscal year 1996, please provide an explanation of the project; where it is located; and the contractor(s) performing the work; why funding requirements are increasing; what the outyear costs by year, beyond fiscal year 1996, would likely be; and the target completion date and end product.

Answer: The following projects are proposed for significantly increased funding in the FY 1996 budget request.

Advanced Power Systems

Indirect Fired Cycle

Program Description: High Performance Power System (HIPPS) - is an indirectly fired cycle utilizing an advanced heat exchanger designed to achieve efficiencies of 47 percent with reductions in SO_2 and NO_x to 1/10 NSPS and a cost of electricity 10 percent less than power plant meeting NSPS.

Location: Foster Wheeler, Livingston, NJ; United Technologies Research Center, East Hartford, CT.

Reason for Increase: There is no increase in the overall IFC program. It remains the same for fiscal year 1996 at approximately $11.9 million. Hauge International (HI), Kennebunkport, ME, which is developing a 25 MBtu/hr ceramic heat exchanger was funded separately from the HIPPS contracts. No funds were requested in fiscal year 1996 for HI; however, it submitted a proposal under a HIPPS phase II solicitation. Funds requested in fiscal year 1996 are sufficient to keep the program that will begin phase II on schedule.

Targeted Completion Date: Year 2003

End Product: Prototype high performance power generating plant

High Efficiency - PFB Program

Program Description: Advanced particle control testing designed to assess new ceramic filter components and materials to obtain particle control database for advanced IGCC and PFB power systems.

Location: Westinghouse Science & Technology Center, PA; Babcock and Wilcox, Alliance OH; Textron Specialty Materials, MA; Dupont Lanxide Composites, DE; Pall Corporation, CA

Reason for Increase: Entering the actual test phase of filter coupons. Refining and validating the design of HGCU filter devices and systems is necessary to assure their capability of meeting basic performance requirements for CCT demonstrations. These materials were tested at TIDD for only short duration, and therefore, sufficient long term operational data is not available.

Targeted Completion Date: Year 2003

End Product: Commercial available HGCU filter material(s) and system(s) for use in second generation advanced cycle PFB systems.

High Efficiency - PFB Program

Program Description: Testing of new materials and devices for Hot Gas Cleanup particle control. Designed to develop new composite type ceramic candle filter.

Location: Westinghouse Science & Technology Center, PA; Southern

Research Institute, AL

Reason for Increase: Contractors are manufacturing the devices. Continue to refine, develop and validate the design and configuration of HGCU filter devices and systems like the granular bed filter in order to significantly enhance performance and reduce costs. This effort also will support the need for a HGCU system capable of meeting basic performance requirements for CCT demonstrations.

Targeted Completion Date: Year 2003

End Product: Commercial available HGCU filter material(s) and system(s) for use in second generation advanced cycle PFB systems.

Advanced Research & Environmental Technology

Program Description: Waste utilization - Designed to demonstrate the utilization of waste materials from advanced coal technologies.

Location: Praxis Engineers, Melpitas, CA; Michigan Technological University, Houghton, MI; University of Pittsburgh, Pittsburgh, PA.

Reason for Increase: Complete the work on these projects.

Targeted Completion Date: March 1997

End Product: Technologies or methods for utilizing waste/ byproducts such as in bricks.

Natural Gas Research

Project Description: NORM - NORM treatment and disposal; bench test and field pilot test up to two NORM treatment and disposal technologies. The tests will attempt to reduce the costs of NORM disposal by up to 70% of currently available disposal alternatives.
Location: Argonne National Laboratory, Argonne, IL, TBD

Reason for Increase: Demonstrate, through field testing, technology to treat and dispose NORM. Risk assessment and quality assurance of data.

Estimated Completion Date: 1998

End Product: Provide more efficient disposal methods for NORM than currently available.

Advanced Turbine Systems (ATS)

Program Description: The ATS Program will develop more efficient gas turbine systems for both utility and industrial electric power generation (including cogeneration). Although the target fuel is natural gas, advanced turbine systems will be adaptable to coal and biomass firing. All advanced turbine systems will exhibit these characteristics:

- Ultra-high efficiency [utility systems: 60 percent (lower heating value basis)/industrial systems: 15 percent improvement over today's best gas turbine systems];
- Environmental superiority in terms of reduced nitrogen oxides, carbon dioxide, carbon monoxide, and unburned hydrocarbons; and
- Cost competitiveness (10 percent lower cost of electricity).

Location: There are five major gas turbine contractors involved in the program:

ABB, North Brunswick, New Jersey
Allison, Indianapolis, Indiana
General Electric, Schenectady, New York
Solar, San Diego, California
Westinghouse, Orlando, Florida

Universities, under the direction of the South Carolina Energy and Research Development Center (SCERDC), will do applied research in ATS-related technology areas. Oak Ridge National Laboratories will direct subcontractors to develop and demonstrate ATS-related manufacturing technologies. The Morgantown Energy Technology Center will do applied and fundamental research, as well as support cycle studies and proposal evaluations by modelling innovative power cycles.

Reason for Increase: Funding requirements are increasing because the program is moving from the concept definition phase into the development and demonstration phase.

Targeted Completion Date: Year 2000

End Product: Prototype high-performance industrial and utility gas turbines.

Project Description: Advanced Stimulation Drilling Hardware - development and testing of novel (i.e. hybrid) drilling systems that minimize formation damage during stimulation, including reducing formation damaging aspects of drilling/completion/fracturing fluids and additives.

Location: TBD

Reason for Increase: Funding needed to continue pace of work and the transfer of the technology.

Targeted Completion Date: Year 2001

End Product: Transfer of technology to private sector.

Project Title and Description: Environmental and Regulatory Analysis - legislative and regulatory impact analysis; trends and analysis of the environmental regulatory barriers to gas resource production and recovery.

Location: Fairfax, VA, Germantown, MD

Reason for Increase: To support risk-based environmental impact analysis of the natural gas industry and to complete environmental model

Estimated Completion Date: 2001

End Product: Completed environmental assessessment analysis and environmental model.

Project Description: DCS Program Support - Computer and other analysis to support selection of field test sites for testing various drilling, completion, and stimulation products; includes data acquisition, handling, analysis, reporting, and coordination with the Drilling Engineering Association program and projects.

Location: Morgantown, WV

Reason for Increase: This project is not being increased, but has lower priority than the core projects

Targeted Completion Date: 2001

End Product: Complete supporting analysis

Project Description: Coal Mine Methane - Continue cost-shared demonstrations to capture methane from coal mines; demonstrations to utilize captured methane

Location: TBD

Reason for Increase: Monies needed to fully fund demonstration designs

Targeted Completion Date: 2001

End Product: Successful demonstration of uses for captured coal bed methane.

Project Description: Environmental Gas Processing - initiate environmental research and development on downstream aspect of natural gas operations, including new methods for remote sensing of leaks from pipelines; initiate analysis directed to delineate the environmental aspects associated with RD&D of technologies and advanced concepts to process natural gas; Clean Air Act compliance technology: methane leak detection, air emissions detection, and technology development for continuous monitoring of emissions.

Location: Sandia National Laboratory, Albuquerque, MN; GRID, Chicago, IL

Reason for Increase: Technology development with industry and national lab in response to Clean Air Act requirements

Targeted Completion Date: 2001

End Product: Development of technology and methods for monitoring emissions in response to the Clean Air Act requirements.

Project Description: Field Fracture Multi-Site - using the DOE multiwell experiment in Rifle, CO to 1) conduct fracturing diagnostics R&D to determine fracture length and height geometry, and estimates of fracture width and conductivity; 2) verify fracture models and investigate basic fracturing mechanisms; [because of previous DOE/GRID work, this area is extremely well characterized geologically and geophysically.]

Location: TBD

Reason for Increase: Funding needed to continue pace of work

Targeted Completion Date: 1999

End Product:

Project Description: Environmental Information Clearinghouse - continue efforts with industry, states, and others on environmental issues affecting gas supply

Location: PTTC, Washington, DC

Reason for Increase: Cooperative development of environmental information network for independent producers

Targeted Completion Date: 1999

End Product: Viable environmental information network for independent producers

Project Description: Geotechnology - study geophysics, geomechanics and geology of naturally fractured reservoirs; 1) seismic signature and properties of fracture gas reservoirs; 2) measure stress changes in a reservoir caused by pore-pressure drawdown and assess changes in permeability and flow rate; 3) obtain and analyze field data to further characterize naturally fractured reservoir

Location: Sandia National Laboratory, Albuquerque, NM

Reason for Increase: This program has not been increased, however, it has a lower priority than other projects

Targeted Completion Date: 2000

End Product:

Project Description: Storage Well Flow Metering Technology - develop a Gas Storage Volume Flow Meter for commercial use to control and monitor gas injection and withdrawal flow rates.

Location: TBD

Reason for Increase: $20 million loss to Gas Storage inventories in 1994 which impacts end-users. The gas volume flow meter is a critical component of a storage well facility. These meters are used to monitor gas injection and withdrawal flow rates. Current storage well metering is deficient and has led to gas shortages during peak season. FERC Order 636 has placed increased operational requirements on gas storage operators. Industry lacks R&D to develop adequate new technologies to mitigate the gas storage inventory losses. Without DOE R&D, natural gas "system" reliability is at risk.

Targeted Completion Date: 1998

End Product:

Project Description: GRID/DOE Storage Deliverability Improvement Project - to evaluate and field test new and novel engineering and stimulation technology to improve storage well deliverability.

Location: TBD

Reason for Increase: Average decline in deliverability in gas storage reservoirs may be as high as 3.2BCFD per year. Gas storage operators are spending over $100 million per year to restore this decline in deliverability. The decline in gas storage deliverability negatively impacts system reliability and increases costs of services to customers.

Targeted Completion Date: 1998

End Product: Improved gas delivery system

Oil Technology

Project Description: Supporting Research Program/Reservoir Characterization Project - This work is to review the results of current research, identify major constraints to reservoir characterization, and to procure activities to solve the constraints.

Location: National Institute for Petroleum and Energy Research, Management & Operating (M&O) Contractor; other sub-contracts; TBD

Reason for Increase: To solve specific, identified constraints from formation heterogeneities and crude oil.

Targeted Completion Date: 1988

End Product: New technologies/methodologies to identify heterogeneities and crude oil concentrations.

Project Description: Supporting Research Program/Technology Transfer Project - This effort is a continuation to open 9 regional centers (plus a home office) that will provide needed data and assistance to independent operators. This effort, operated by the Petroleum Technology Transfer Council, is just beginning Phase II, which is the implementation of the regional offices.

Location: National Institute for Petroleum and Energy Research and PTTC (Washington, D.C.). M&O Contractor subcontracted to the Petroleum Technology Transfer Council (PTTC). Regional Lead Organizations include: Appalachian Oil and Natural Gas Research Consortium (West Virginia), Louisiana State University Energy Center , Kansas University Energy Center, Geological Survey of Alabama, Oklahoma Geological Survey, Illinois State Geological Survey, Petroleum Recovery Research Center (New Mexico Tech University), TIPRO Foundation (Austin, TX)/Bureau of Economic Geology (Austin, TX).

Reason for Increase: To implement Phase II

Targeted Completion Date: Federal involvement will end in FY 1999

End Product: Fully self-sustaining regional offices.

Project Description: Supporting Research Program/Exploration and Drilling Project - This effort is to continue basin analyses to identify underexplored basins with high potential for additional crude oil reserves. The expansion will initiate analyses in a second basin.

Location: National Institute for Petroleum and Energy Research; Management & Operating (M&O) Contractor; other sub-contracts TBD

Reason for Increase: Adding second basin to be analyzed.

Estimated Completion Date: FY 2000.

End Product: Substantially lower exploration costs per barrel of new reserves.

Project Description: Processing/Downstream Program - Pollution Prevention Element. The goal of this activity is to help the industry provide the technologies to prevent the formation of pollutants by process modifications and/or unit changes in the refineries. Work will be done to increase the understanding of the importance of process changes to pollution levels and to develop cost-effective processes. The technology will be targeted at specific pollutants, such as air emission toxics, wastewater, and coke and spent catalysts.

Location: M&O contractor, Argonne National Laboratory, Lawrence Livermore National Laboratory.

Reason for Increase: Prevent the closure of additional refineries, prevent the loss of jobs, and further protect the environment.

Targeted Completion Date: 2000

End Product: Help maintain our domestic refineries which are important to national energy security.

Project Description: Processing/Downstream Program - Environmental Compliance Project - this activity will be conducted in cooperation with the Petroleum Environmental Research Forum

(PERF - 28 member companies) to perform research and implementation programs concerned with bioremediation of crude oil and product contaminations of soils and ground water. Work will develop measurement technologies of hydrocarbon levels in soils and water. They will also develop biobarriers to remove oil from the water.

Location: M&O contractor, Lawrence Livermore National Laboratory, Oak Ridge National Laboratory, Brookhaven National Laboratory and Idaho National Engineering Laboratory.

Targeted Completion Date: 2000

End Product: More environmentally acceptable soil and water around old and ongoing petroleum industry facilities with technologies to be implemented world-wide.

Question: For each new project proposed in the budget, please explain the project; why it is necessary; and provide the same details as requested for existing projects.

Answer: The following new projects are proposed in the FY 1996 budget request.

Natural Gas Research

Project Description: Priority Area Basin Demonstration - extrapolation and demonstration of technical results from the successful Piceance Basin Slant Hole completion test in Colorado and the Greater Green River Basin Production Demo, to other western basins with the objective of fostering development therein.

Location: TBD

Reason for Increase: DOE investment needed to provide seed money to reduce risk through leveraging funds for RD&D work. The product will be increased industry development of gas basins resulting in up to an additional 1 TCF per year of new gas production by 2000.

Estimated Completion Date: 2000

Project Description: Basin Analysis - develop a probabilistic economic and production assessment (engineering-type assessment) of U.S. natural gas basins. This project represents a "next step" in converting the geological assessment of onshore and state waters gas resources, conducted by the U.S. Geological Survey (released February 14, 1995), and the pending estimates of offshore and deep waters gas resources, to be conducted by the Minerals Management Service (expected release late 1995), to proven reserves of natural gas.

Location: TBD

Estimated Completion Date: 1999

Project Description: Delivery Program - foster uniform production reporting model guidelines for states to improve the accuracy and timeliness of oil and gas production data and information; advance real-time electronic flow measurement technology for metering and monitoring pipeline gas flows.

Location: TBD

Reason for Increase: The Delivery Program is part of the core Departmental Natural Gas Research Program. Delivery and storage is the critical link between supply (producers) and demand (consumers). Industry/GRID and other stakeholders believe a DOE delivery and storage program is necessary for gas system deliverability and supply reliability to meet growing demand for gas because the pipeline industry's investment in delivery R&D is not allowed in its current rate design. This funding is needed to reduce overall supply costs and to ensure overall gas system efficiency.

Estimated Completion Date: 1998

Oil Technology

Project Description: Gulf Coast Heavy Oil - This work involves field demonstrations to stimulate activities to recover heavy oil in a region with available refining capacity. Although our current program includes several field projects in heavy oil reservoirs in California, there are no such projects targeting the heavy oil, unconsolidated Gulf Coast reservoirs. The production and reservoir data for the Gulf Coast heavy oil fields are sparse. However, it is estimated that one to two billion barrels of oil exist in these small to medium sized reservoirs. The cost share on these projects would be a minimum of 50%.

Location: Gulf Coast States - Gulf Coast producers working in teams with universities and service companies

Estimated Completion Date: 2000

Project Description: Analysis and Transfer of Results - The first part is to study industry projects outside our program to provide the Petroleum Technology Transfer Council with technology transfer modules, and to use this information to guide supporting research activities. Specific activities would include data gathering, domestic production impact analysis, and reservoir simulation. We would be piggy-backing onto projects that have been funded 100% by industry, but that do not currently have any technology transfer activities associated with them.

The second part is to assess class projects for synergism and to provide the Petroleum Technology Transfer Council with technology transfer modules. Work included in the analysis of these projects will be data gathering and transmission, an update of our database runs to determine if the projected results were accomplished, and reservoir simulation.

Location: M&O Contractor, Oklahoma

Estimated Completion Date: 2000

End Product - Increased domestic oil production through improved technology transfer.

Project Description: Marginal Wells - This activity would include working with a group of operators in a single unit or field to improve reservoir management techniques, as well as conducting small, cost-shared projects, proposed by industry, to improve marginal well production. This effort is aimed at independent producers, who do not have their own research and development departments, but who will play an ever increasing role in domestic production operations.

This program takes an active role in solving common production problems aimed at extending the economic life of the more than 500,000 marginal oil wells. These wells produce approximately 700 million barrels of oil equivalent per year, representing $10 billion of avoided imports each year according to the National Petroleum Council's Marginal Well Study, July 1994. When these wells reach their economic limit, they must be plugged in an environmentally sound manner including setting cement in the hole, removing the production equipment, restoring the land to its original contour and condition, and setting a permanent marker to locate the old wellbore. It is prohibitively expensive to re-equip these wells to recover the remaining oil. Plugging these wells removes the infrastructure for the wells, removes the entry to these reservoirs, and removes all hope of the State and Federal Government receiving future revenue.

Location: TBD

Estimated Completion Date: 2000

End Product - More efficient and effective domestic production.

Project Description: Rocky Mountain Oilfield Testing Center - New technologies will be field tested in the drilling, production, and environmental arenas prior to full scale deployment. This oilfield is the most widely characterized and studied field in the United States making it a model site for testing new equipment or recovery techniques. This field also offers the opportunity for small businesses and independent oil producers who have limited resources to have easy access to field testing that is not readily available otherwise. It is proposed that training of independent operators and others such as Native American tribe members will also be part of this center.

Location: Casper, Wyoming

Vendor: Naval Petroleum Reserve No. 3 personnel, small businesses, and independent oil producers

Estimated Completion Date: 2000

End Product - The long-term viability of this field will be positively affected by applying technologies that have been successfully demonstrated.

Project Description: Upgrading Technology Development - Crude oil feedstocks to U.S. refineries from domestic sources continue to become heavier and more difficult to process. Certain, heavy, domestic crude oils have the potential for substantial increased production if adequate refining capabilities are available. Our objective is to assist the industry to develop cost-effective and environmentally acceptable domestic heavy oil and residues upgrading and processing technologies employing skills within the national laboratories. This would be of particular importance to the independent producers and refiners in California and parts of Texas.

Location: TBD

Vendor: M&O Contractor; Lawrence Livermore National Laboratory; Argonne National Laboratory and Brookhaven National Laboratory

Estimated Completion Date: 2000

End product - more production and refining of domestic heavy crude oils which would provide more jobs and less importation of foreign crude oil.

Fuel Cells

Project Description: Climate Change Action Plan; accelerated demonstrations of advanced fuel cells

Location: TBD

Rationale for start: Accelerate the market penetration rate by advanced fuel cells in support of reducing emissions of greenhouse gases by increasing confidence levels within private sector.

Target completion date: September 1998

End product: Operating power plants demonstrating market readiness in performance and cost

Impact of Budget Request on METC and PETC

Question: What would be the total impact on funding for METC and for PETC if your budget proposal were adopted?

Answer: The FY 1996 Budget proposes reductions in advanced R&D at METC and PETC. These reductions are consistant with the Administrations attempt to limit funding to an absolute minimum level for all research and development. While some activities will be curtailed or eliminated at each site, the overall need to reduce Federal expenditures is considered a higher priority.

The specific impact at METC includes reductions for: hot gas cleanup and sorbent development efforts and site support contractor requirements will be reduced. These areas have been among the strongest attractors for industrial participation in the METC in-house program.

The impact at PETC includes reductions for: Termination of coal liquefaction proof-of-concept testing and demonstrations would occur. Gas-to-Liquids conversion efforts would not be pursued. Coal preparation efforts, both industry/national laboratories and in-house, would be significantly reduced, as would Flue Gas Cleanup and combustion research.

Both sites would experience reductions in support services, which encompass program/project support, as will as janitorial/housekeeping functions. Funding for travel, supplies and materials, trainings, and facility utilities would be reduced.

Question: For the record, please provide a project level analysis of funding at METC and PETC in FY 1995 and FY 1996.

METC Projects

Syngas and H2 Production

Perform systems analysis to assist in syngas system design and identify design concepts to achieve cost savings. Program does not continue in FY 1996. No activities are planned for FY 1996. (FY 1995 $40,000; FY 1996 $0)

Integrated Gasification Combined Cycle (IGCC) Systems

Modular Gas Cleanup Rig: This unique integrated coal gasification and hot gas cleanup facility is operated by site personnel in Morgantown in conjunction with private industry, and functions to facilitate technology transfer of equipment and technology associated with high efficiency Integrated Coal Gasification Combined Cycle (IGCC) power plant systems. Experiments investigate the effects of real coal gas on particulate filters and materials and novel desulfurization sorbents. In the FY 1994, the facility was operated directly with 6 industrial partners, 4 under CRADA agreements. FY 1995 activity calls for equipment modifications and two 150-hour runs to test a variety of Hot Gas Clean Up (HGCU) systems. In FY 1996, activity would continue at a more modest rate. (FY 1995 $1,771,000; FY 1996 $750,000)

Sorbent Development: Research is being conducted to identify and develop an economically viable and environmentally acceptable regenerable sorbent capable of removing various pollutants from the product stream of coal-derived hot fuel gas. Development of such a material remains one of the primary barrier issues for commercial introduction of Integrated Gasification Combined Cycle (IGCC) power plant systems. In less than two years, METC's integrated research team has identified several sorbents that appear superior to any sorbent presently available. The group presently is in the process of setting up a CRADA with an industrial partner to manufacture, test and eventually commercialize the METC developed sorbents. Under the FY 1996 budget proposal, this activity would not support continued industrial commercialization efforts for existing METC sorbents. (FY 1995 $1,270,000; FY 1996 $500,000)

Hot Gas Cleanup - Process Development: For Integrated Gasification Combined Cycle (IGCC) applications, METC is developing an advanced hot gas desulfurization process based on fluidized-bed and transport-bed technology. This unique process development facility will solve operations and engineering scale issues to improve hot gas desulfurization technology using low-cost, long-life sorbents. The project consists of two units: the Process Development Unit (PDU) and a supporting Syngas Generator. The Syngas Generator will also support Advanced Turbine System combustion studies. The system is under construction and will be operated in Morgantown, WV, by METC personnel. Once operational, the project will provide a testbed for government and industrial partners to investigate important issues in hotgas cleanup technology for Integrated Gasification Combined Cycle (IGCC) power plant systems. Design and permitting activities as well as equipment procurements are the focus of FY 1995 activities. Construction is expected to begin in late FY 1995 and under the FY 1996 budget proposal will not be completed until FY 1997. (FY 1995 $2,328,000; FY 1996 $2,700,000)

Gasification Product Improvement Facility Supporting R&D: For Integrated Gasification Combined Cycle (IGCC) applications, we are developing improvements in gasification technology in the Gasification Product Improvement Facility. Supporting in-house work at METC involves use of cold flow (physical) models and mathematical models to assist in design of an advanced composite gasifier, assessing methods for disposal/conversion of solid wastes, and improving instrumentation for process control and measurement of contaminants. The project is being carried out under a Cooperative Research and Development Agreement with three industrial partners. (FY 1995 $1,255,000; FY 1996 $592,000)

Process Simulation, Modeling and Analysis: Develop process models for assisting desulfurizer process and equipment design; perform system simulations and economic studies with integration of the desulfurizer and process into advanced power systems. Perform system simulation, analysis, assessment, and cost estimation for advanced IGCC power systems with the objective to achieve high system thermal efficiency and low emissions. Systems which integrate the hybrid fixed-bed gasifier with an advanced hot gas cleanup unit and a high efficiency gas turbine are analyzed. GPIF process development activities are supported by identifying alternate design concepts and project engineering support. (FY 1995 $575,000; FY 1996 $700,000)

Pressurized Fluidized Bed Combustion Systems

Particulate Control: In support of combustion cleanup, research is concentrating on evaluating and developing high temperature and pressure particulate control technology for hot gas cleanup in advanced power systems. This involves examining integrated solids and gaseous cleanup and fundamentals including the roles of boundary conditions in gas solids processing, erosion and the mechanism of particulate agglomeration. In addition, modeling and simulation studies of fluid bed processes ar being conducted. (FY 1995 $1,990,000; FY 1996 $1,500,000)

Process Simulation, Modeling and Analysis: Acquire and test a dynamic model and perform modeling for a pressurized fluidized bed combustion system to identify transient behavior of several potential upset conditions and to develop control strategies. Perform system simulation, analysis, assessment, and cost estimation for advanced PFBC power systems with the objective to achieve high system thermal efficiency and low emissions. (FY 1995 $50,000; FY 1996 $150,000)

Advanced Research & Environmental Technology

Process Simulation, Modeling and Analysis: Characterize solid wastes obtained from Clean Coal demonstration facilities; identify potential markets; and determine the environmental and economic impact of utilizing the material. (FY 1995 $100,000; FY 1996 $100,000)

Natural Gas Research, Resources and Extraction

Natural Gas Research: Current research focuses on the development of products and techniques that foster more efficient and better recovery of natural gas from U.S. reservoirs. The current emphasis is: (1) to determine cost-effective gas storage field development strategies to improve deliverability and increase overall storage efficiency, and (2) to develop better techniques to characterize natural fracture networks and forecast production potential. These are being pursued in cooperation with the gas industry through three CRADAs. Expertise in geologic modeling, reservoir simulation, and engineering is also supplied to other DOE gas program activities through support in site selection for field projects, analysis of results, and comparison studies of the effectiveness of horizontal and vertical wells for field development. (FY 1995 $900,000; FY 1996 $500,000)

Process Simulation, Modeling and Analysis: Continue development of natural gas atlas and system models. Exercise model to support natural gas research policy and analysis. (FY 1995 $597,000; FY 1996 $450,000)

Natural Gas Research, Utilization

Combustion Research: For the Advanced Turbine Systems (ATS) program, METC is investigating advanced methods for control of combustion oscillations in gas turbines, investigating potential applications of pulsed combustion for gas turbines, partnering with industry and universities to develop improved combustion systems for advanced gas turbines with excellent environmental performance, providing a facility to test advanced combustion concepts for gas turbine applications, and modelling NOx control in gas turbine combustion systems. This work supports the development of advanced gas turbine systems fired on both natural gas and coal derived gaseous fuels containing fuel bound nitrogen.

A low emissions combustor test and research facility is currently operating to develop and demonstrate advanced low emissions turbine combustion concepts; in particular, the development of low NOx combustor technology. (FY 1995 $1,125,000; FY 1996 $1,400,000)

Combustion Stability: In collaboration with turbine manufacturers, METC is developing methods to solve combustion stability problems that have troubled both existing, and advanced engine designs. This issue has been repeatedly identified as a national priority for the U.S. gas turbine industry and an external review of METC's approach to this problem was described as "likely to be of national significance." (FY 1995 $1,395,000; FY 1996 $1,400,000)

Process Simulation, Modeling and Analysis: Perform analysis of power generation systems which integrate ATS with other METC power generation products. (FY 1995 $500,000; FY 1996 $500,000)

Low-Quality Natural Gas

Process Simulation, Modeling and Analysis: Continue analysis and development of advanced concepts for LQNG upgrading. (FY 1995 $250,000; FY 1996 $250,000)

Fuel Cells

Process Simulation, Modeling and Analysis: Perform assessments aimed at developing FC products with high efficiency, low cost, and low emissions. FY 1996 efforts continue to perform system assessments aimed at developing FC products with high efficiency, low cost, and low emissions. (FY 1995 $101,000; FY 1996 $100,000)

Externally Fired Combined Cycle

Experimental Investigation of Water Injection: For the Externally Fired Combined Cycle (EFCC) system, METC is testing methods for water injection to improve process efficiency, and solving operating issues for the combustor/heat exchanger system using advanced instrumentation, mathematical models, and combustion knowledge. (FY 1995 $641,000; FY 1996 $0)

Instrumentation Support: METC is using expertise in advanced instrumentation to assist industrial partners in testing concepts for potential commercial applications of fossil energy technologies.. In particular, METC is using control instrumentation, combustion diagnostics and mathematical models to assist a small business partner preparing to conduct a test of his combustion process that will be critical to his future business. (FY 1995 $780,000; FY 1996 $675,000)

PETC Projects

Coal Preparation

Coal Preparation Process Development

This project involves several tasks related to the Program's High

Efficiency Preparation (HEP) and Compliance Technology (CT) efforts. The Center's Process Research Facility will be utilized to support contract activities under the HEP program, as well as to continue equipment performance tests; conduct in-house research; prepare bulk lots of specification feedstocks for other PETC coal utilization tests, and conduct research with industrial partners through the Cooperative Research and Development Agreements (CRADAs). In support of HEP, a novel process has been developed utilizing inexpensive hydrocarbon emulsions to improve the handleability and enhance the dewatering of fine coal. Field testing at a commercial coal preparation plant is planned in FY95/FY96. Finally, in support of CT, a next generation column flotation technology is under development that wili increase throughput and improve of pyrite and trace element removal. (FY 1995 $1,438,073; FY 1996 $1,088,069)

Exploratory Coal Preparation Research

The research focuses on investigating the fundamental electrostatic behavoir of fine coal particles in support of the development of a dry, triboelectrostatic coal cleaning electrostatic charging behavior of fine coal particles technology. Tests are also being performed on flyash for potential application of the process for producing a quality product for use in the cement industry. Studies of the interactions between fine coal particles and heavy-oil emulsion droplets are also being performed to formulate inexpensive emulsions for the dewatering and reconstitution of fine coal. In addition, a optical/computer system is being developed that can obtain useful statistical information about particle/fluid streams such as size and density distributions. This system would be applied to the on-line monitoring of gravity-based coal cleaning equipment. Both the Program's HEP and CT components are supported by this project. (FY 1995 $682,227; FY 1996 $507,227)

Fundamentals of Coal Preparation

This project addresses the needs of the Program's CT activities and is focused on a fundamental investigation of the spontaneous combustion of thermally dried low-rank coals (LRCs) to help identify methods to reduce or eliminate this serious problem. A newly designed, laboratory-scale reactor system has been constructed for preparing thermally-dried LRC products for spontaneous combustion testing. In addition, a number of analytical methods will be screened to determine which are most sensitive to changes in the oxidative stability of the thermally-treated LRCs. (FY 1995 $529,704; FY 1996 $404,704)

Alternative Fuels Utilization

Advanced Clean Fuels

This work develops data on burning cleaned coals produced from advanced coal cleaning processes, and blends of new coals and coal-based materials (i.e., Alaskan bituminous coals and hot-water dried slurries). Physical properties and combustion characteristics of these fuels are to be evaluated for flame stability, carbon burnout, fouling and slagging behavior, and emissions. More importantly, blends of coal and other combustible wastes such as biomass and coal fines must be tested for development of a co-firing scheme of coal and wastes in utility plants. Burners for the fuels and optimum fuel preparation processes for minimization of emission levels will be developed. (FY 1995 $200,000; FY 1996 $300,000

FUEL SYSTEMS

Direct Liquefaction

PETC's Inhouse R&D is focused on developing promising technologies for catalytic liquefaction from laboratory batch-scale into continuous unit operations. The ultimate goal is to integrate improved coal liquefaction technologies, based on bench-scale continuous unit tests and evaluations, into more efficient and cost effective process configurations. Key components are the testing of emerging dispersed catalysts and novel supported catalysts for subsequent scale up to larger units at Exxon and HTI (formerly HRI). (FY 1995 $1,200,000; FY 1996 $1,000,000)

Indirect Liquefaction

PETC is conducting two projects for the Indirect Coal Liquefaction Program: Fischer-Tropsch Slurry-Phase Catalysis and Slurry Fischer-Tropsch Catalyst Development. The former project is focusing on increasing the technical knowledge on the preparation, activation, and performance of iron-based catalysts and to provide, on an as required basis, technical guidance for Fischer-Tropsch runs at DOE's Alternative Fuels Development Unit (AFDU). The latter project is aimed at developing hydrodynamic and kinetic parameters that are relevant to the design, scale-up, and operation of slurry-phase reactors and to develop and validate a comprehensive mathematical model for these reactors. All PETC work on these two projects will continue at the same level of effort in FY 96 as in FY 95. (FY 1995 $696,000; FY 1996 $700,000)

Advanced Research and Environmental Technology

Coal/Waste Coprocessing

This project is focusing on the development of processes that will economically recycle wastes into liquid fuel feedstocks. Rheological properties of coal/waste feed slurries have been investigated to ascertain pumping ranges and have led to the choice of proper feed preparation conditions used in a successful bench-scale run of plastics/coal conversion at HRI. Future research would establish the detail conversion characteristics of mixed plastic waste and used tires with coal and map regions of processing parameters to obtain optimum conversion with various coals, explore reaction pathways to increase HDPE conversion, and to find pathways for the conversion of paper and other lignocellulosic waste along with coal to useful products. (FY 1995 $400,000; FY 1996 $200,000)

Dispersed Catalysts for Coprocessing and Coal Liquefaction

This project is focusing on improving the dispersed catalysts employed in the production of clean fuels from low value hydrocarbons in order to minimize the economic constraints put upon the process. Techniques for exfoliation and restacking of molybdenum sulfide have been used to produce dispersed catalysts that show promise for the liquefaction of coal and the upgrading of petroleum resids, especially for sulfur and nitrogen removal. Variants of the synthesis procedure would be employed in the future to develop an active, stable, and selective catalyst for coal/waste coprocessing, especially polyethylene conversion. This project will not be continued in FY 1996. (FY 1995 $350,000; FY 1996 $0)

Liquefaction Chemistry and Kinetics

In this project, PETC R&D is focused on increasing the knowledge of the chemistry and kinetics of the interaction that a catalyst, solvent, and/or hydrogen have with coal in the initial dissolution and first stages of direct liquefaction in order to establish the most favorable and economic process conditions for various coals. This project has established pretreatment conditions that would have a beneficial impact on coal conversion. Future plans are aimed at establishing the effectiveness of dispersed catalysts in transferring hydrogen from solvents to coal and the conditions required to minimize retrogressive products. This project will not be continued in FY 1996. (FY 1995 $300,000; FY 1996 $0)

Liquefaction Product Upgrading

This project is developing novel process concepts, characterizing feedstocks and products, and evaluating the activity and selectivity of catalysts that will be used in new process technologies for upgrading liquefaction products to meet environmental regulations requiring low sulfur and aromatics in fuels. A novel analytical technique has been established to selectively characterize certain components of direct liquefaction products, and an interesting catalyst has been identified that accomplishes ring opening and hydrogenation in a single process which offers promise to an economic route for upgrading coal-derived products. This effort will be continued in FY 1996 at about one-half of the level of effort of FY 1995, thereby slowing considerably the progress in these promising areas of research. (FY 1995 $250,000; FY 1996 $129,000)

Slurry Fischer-Tropsch Catalyst Development

This activity is aimed at developing catalyst preparation and pretreatment techniques for high-surface area iron- and cobalt-based Fischer-Tropsch catalysts that possess the desired activity, selectivity, and stability for use in slurry bubble column reactors. A series of novel Fischer-Tropsch catalysts have been developed using a method involving the synthesis of hydrotalcite-like precursors. Preliminary tests show promise for the conversion of synthesis gas to liquid hydrocarbons. Future research would optimize the composition and pretreatment of the catalysts and establish methods for scale-up of catalyst for tests in bench-scale units. This project will not be continued in FY 1996 (FY 1995 $294,000; FY 1996 $0)

NATURAL GAS UTILIZATION

Gas-to-Liquids Conversion

PETC's in-house projects support the Natural Gas Utilization, Gas Conversion Subprogram key activity by developing novel reaction pathways and catalysts for methane activation. In FY 1995, PETC In-house R&D continued to explore the photocatalytic oxidation of methane to methanol and hydrogen under mild conditions using low-cost raw materials, namely, water and methane in the presence of light. As a result of the success of Dow-Corning's oxyhydrochlorination technology, the R&D effort at PETC in FY 1996 will be devoted to exploring the conversion of methyl chloride to fuels and fuel components. (FY 1995 $200,000; FY 1996 $200,000)

Advanced Power Generation Systems

Indirectly-Fired Cycles (HIPPS)

In FY 1995 and FY 1996, PETC in-house research will continue to support materials evaluation for advanced indirectly-fired power generation cycles and to explore aspects of the advanced cycles related to NO_x emissions and to the performance of slag screens. Blending recycled turbine exhaust gas with combustion air to improve the overall system performance will be investigated. (FY 1995 $675,000; FY 1996 $700,000)

Concepts for Advanced Environmental Control

Advanced Research and Environmental Technology

This work is needed to investigate a novel concept of NO_x destruction occurring at the eddies of a fuel-rich zone of a combustor and to develop an enhanced predictive model for NO_x emissions. This model could be used for development of an advanced control scheme for commercial operation of emissions control technologies. (FY 1995 $225,000; FY 1996 $250,000)

Advanced Research and Environmental Technology

Flue Gas Cleanup

Evaluation of Supported Metal-Oxide Processes

The goal of this effort is to develop a design basis for a novel, highly efficient approach to the simultaneous removal of SO_2 (99%)and NO_x (95%) and evaluate its performance.

This project supports the **Superclean Emissions** key activity by developing the Moving-Bed Copper Oxide Process. The use of copper oxide sorbents in a moving-bed contactor has been shown to be effective in removing SO_2 and NO_x in previous bench-scale studies, achieving pollutant removal efficiencies approaching 90% and complete sorbent utilization. This process is regenerable, producing a salable byproduct (sulfuric acid), and improves the thermal efficiency of the power plant (gives heat back to the power plant to generate more electricity).

Economic analyses have shown that this approach is the lowest cost means of achieving these high removal efficiencies. Equally important is the ability of the Moving-Bed Copper Oxide Process to be integrated into advanced pulverized-coal fired power generating systems under development in the Combustion 2000 Program.

A joint industry/government evaluation of the Moving-Bed Copper Oxide Process will be completed this year. A CRADA has been signed with several industrial participants of the Combustion 2000 Program to collaborate in the development of this process.

The life-cycle test system, an experimental unit, has been shaken down. Temperatures of operation have been obtained in various vessels while circulating a copper oxide/alumina sorbent. A test plan has been developed to investigate the Moving-Bed Copper Oxide Process and the unit is ready to begin a series of parametric tests designed to establish a baseline for design of the system. (FY 1995 $1,899,000; FY 1996 $1,800,000)

Flue Gas Cleanup Chemistry

The goal of this project is to (1) develop improved sorbents for cost-effective and efficient removal of SO_2 and NO_x from flue gas and (2) provide information required to evaluate novel approaches to the recovery, reuse, and disposal of CO_2.

This project supports the **Superclean Emissions** key activity by investigating novel systems employing metal oxides for SO_2/NO_x removal. Systems that have an element of heat recovery and produce salable byproducts are being evaluated. It also supports the **CO_2 Recovery, Reuse, and Disposal** key activity by focusing on the most important problem associated with CO_2 control, disposal of the captured carbon dioxide. This project is developing an understanding of the formation and dissolution of clathrates at temperatures and pressures found in the ocean. This knowledge will allow schemes for the injection of CO_2 in the ocean to be postulated. (FY 1995 $512,000; FY 1996 $600,000)

Fate of Air Toxics During Pretreatment and Utilization of Coal

The goal of this project is to ultimately demonstrate the best means for reducing the emissions of air toxics from coal-fired power plants to environmentally acceptable levels.

This project supports the **Air Toxics & Fine Particulates** key activity by addressing the fate of the eleven metals from Title III of the Clean Air Act Amendments of 1990 in all facets of burning coal to generate electricity. The major thrust of this work is to determine the distribution of these toxic metals through coal preparation, combustion, and flue gas cleanup systems normally employed in the utilization of coal by electric utilities.

Research efforts are coordinated with industry partners and other projects within the program to provide the required data. Battelle Columbus Laboratories has sampled two boilers at the Sammis Plant of Ohio Edison operating under two combustion conditions. Coal from the Sammis Plant has been delivered to PETC for tests to be conducted at a scale of 0.75 MW(e) to allow comparison of the results with full-scale data. A portion of this coal will be cleaned in the state-of-the-art Coal Preparation Process Research Facility. Both the cleaned and parent coal will undergo comprehensive characterization and both coals will be burned in the 500 lb/hr combustor. Emissions from the combustor will be characterized and compared for the two fuels.

Discussions have been held with outside organizations to use the facility to evaluate and develop continuous air toxics monitoring instrumentation and new analytical techniques. (FY 1995 $489,000; FY 1996 $0)

Heat Transfer Properties of Ash Deposits

AR&TD - Coal Utilization Science

This work consists of both experimental studies and computer modeling. For performance prediction of a combustor, heat transfer properties of ash deposits are crucial. Ash deposits will be examined for flow and heat transfer characteristics. Laboratory measurements of thermal diffusivity will be made using a laser flash apparatus and slag viscosity using a slag viscosity round robin. The rheological properties of the slag will be varied to examine the flow characteristics and a predictive model for coal slag flow will be developed. (FY 1995 $300,000; FY 1996 $300,000)

NAVAL PETROLEUM AND OIL SHALE RESERVES
OVERVIEW OF BUDGET REQUEST

Question: Why do you propose to place NPR-1 and 2 in a caretaker status, reducing their budget by 52 percent, while you increase NPR-3 (Teapot Dome) funding by 21 percent?

Answer: Budget prioritization within the Department of Energy resulted in the significant reduction in the Naval Petroleum and Oil Shale Reserves budget in FY 1996. A determination was made to take all of the reductions from the budget that was originally proposed for FY 1996 from the Reserves in California. Additional funding for drilling had been requested for the Naval Petroleum Reserve in Wyoming (NPR-3) as the first step toward stripping the last remaining oil and abandoning that field over the next four to five years.

Question: If the corporation is supposed to have jurisdiction over all the Naval Petroleum and Oil Shale Reserves, why aren't they all proposed for a "caretaker" budget?

Answer: All of the Reserves are subject to the caretaker budget. As above, the Program did not feel it prudent to slip the drilling schedule, and hence the orderly abandonment, of NPR-3.

Sale of Elk Hills

Question: Why do you propose to set up a government corporation to run the Naval Petroleum Reserves in fiscal year 1996, only to sell it in fiscal year 1997?

Answer: The Department and the Administration have amended the approach for disposition of the Naval Petroleum and Oil Shale Reserves. The revised strategy provides for the Department to make every diligent effort to sell the Reserves in FY 1997. The Reserves will not be sold for less than the net present value of the estimated revenue stream (adjusted for financial considerations relevant to a sale, such as tax payments by a private owner) if the government continued to own and operate them. The Reserves will be corporatized only if the minimum sales price is not met. Legislation is being prepared which (1) authorizes the Department to prepare a sales strategy and put the Reserves on the market, at a minimum price to be determined in accordance with criteria set forth in the statute, (2) amends current legislation to allow the Department to operate the Reserves more profitability between now and the time the Reserves are offered for sale; and (3) if the President determines that offers to buy the Reserves fail to meet the minimum sales price established in accordance with the criteria set forth in the statute, authorizes the establishment of a Government corporation.

Question: How long will it take you to set up a government corporation?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. If the offers to buy the Reserves fail to meet the minimum sales price as established by statute, the legislation will also provide the

Department the authority to establish a Government corporation Based on recent experience with corporatization of the Department's Uranium Enrichment Program, it is estimated that a minimum of six months will be required to accomplish the restructuring and have a functioning corporation operating the Reserves. However, it is estimated that a phased transition approach would be taken which would allow key features of the corporation to take effect much sooner

Question What will it cost to set up this corporation and where will you get the funds?

Answer The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department Only if it is determined that the minimum sales price as established by criteria set forth in that statute will not be met, would a Government corporation be established for operation of the Reserves. Preliminary analysis indicates that new, incremental administrative costs associated with the formation of the corporation would be incurred These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A complete analysis of start-up costs is being prepared as part of a Business Plan for the corporation, which is expected to be completed by late May 1995.

Question. What tasks need to be accomplished and what would the schedule be to establish a corporation? Will you place a milestone schedule in the record?

Answer Detailed Business and Transition Plans are now being prepared, which we expect to complete in late May 1995. We will enter into the record as soon as possible a specific set of milestones to complete the transition to a corporation during FY 1997

Question. Who will serve on the board of directors?

Answer: Legislation now being prepared by the Department which we plan to send to the Congress in the very near future for the sale/corporatization of the Reserves provides that the Secretary of Energy appoint a single administrator in whom the powers and functions of the corporation are vested We would expect that the individual who is appointed would be highly qualified and experienced in the administration and management of large corporations, petroleum engineering, production, marketing and finance.

Question. Why would anyone want to be on the board, if the corporation will only be operating for a few months?

Answer Under the Department's new policy, every effort will be made to dispose of the Reserves through sale. Only if a minimum sales price established by criteria set forth in the statute is not met, will a Government corporation be formed to operate the Reserves. If this were to occur, the current proposal does not include establishment of a Board of Directors.

Question: What can you achieve in a few months or a year of operation as a corporation that will maximize the selling price of the reserve for the taxpayer? What significant investments will you make?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 to be accomplished in accordance with criteria set forth in the legislation now being prepared by the Department. In addition, this legislation proposes to amend current legislation (such as MER requirements, 20 percent cap on sales to one purchaser, etc.) to allow the Department to operate the Reserves more profitably between now and the time the Reserves are offered for sale. A Government corporation would be formed only in the event bids fail to meet the minimum sales price established in accordance with the statute. Under this new policy, no significant investments would be made prior to sale.

Question: Have you conducted a cost/benefit analysis on the corporatization and sale? Please explain.

Answer: Operational, managerial, institutional, legal, historical and economic analyses of organizational alternatives for the NPOSR have been underway for the last two years, including two reports to Congress ("Evaluation of Operations at Naval Petroleum Reserves No. 1," by an independent panel of industry experts, and "Restructuring the Naval Petroleum and Oil Shale Reserves," by the National Academy of Public Administration). A series of internal NPOSR reports compared a wide range of policy options for maximizing the asset value of the reserves. In addition, the General Accounting Office has been requested by Congress to examine restructuring the NPOSR program as a government corporation and is presently working on that analysis.

Question: When do you expect to submit legislation to the authorizing committees on this issue?

Answer: Draft legislation has been submitted to the Office of Management and Budget for review and interagency coordination. We are unable to determine when this process will be complete. However we are proceeding in an expedited fashion to have legislation ready for submission to the Congress in April, 1995.

Question: If authorizing legislation is not forthcoming, how can you afford to operate the reserve on the caretaker budget proposal in your fiscal year 1996 request?

Answer: The FY 1996 Budget Request proposes a caretaker budget for the Naval Petroleum and Oil Shale Reserves (NPOSR) while preparations are made to complete a sale in FY 1997. In the interim, the Department will augment the caretaker with available unobligated balances. Additionally, the Department will institute operating efficiencies within the NPOSR to reduce costs.

Question: You estimate that receipts from NPR will be $461 million in fiscal year 1995. What receipts will you generate in fiscal year 1996 if you are in a caretaker status?

Answer: The NPOSR will generate receipts of about $463 million in FY 1996, assuming that the caretaker budget will be augmented with unobligated balances from within the Department and cost savings from increased operating efficiencies

Question: How did you come up with your estimate of $1.6 billion to be gained from the sale of the Elk Hills reserve?

Answer: The estimate of a gain of $1.6 billion from the sale of Elk Hills is the total of the sales price, operating costs saved, and operating revenues lost for the period FY 1997 through FY 2000. It is calculated as follows:

Sales price	$2.6 billion
Operating costs saved through sale (FY 1997 - FY 2000)	.7 billion
Operating revenues lost through sale (FY 1997 - FY 2000)	- 1.7 billion
Net Gain	$1.6 billion

Question: Why isn't the proposal to sell Elk Hills a bad deal for the taxpayer?

Answer: The taxpayer will benefit in several ways from the sale of the NPRs. Taxpayers increasingly are demanding less government. Activities that are inherently governmental must continue to be provided by the Federal government. However, activities of a commercial nature can be conducted by the private sector more efficiently. Because commercial enterprises managed by the private sector are more efficient than commercial enterprises managed by the public sector, privatization of the NPRs will benefit taxpayers by assuring that ultimate recovery of this domestic hydrocarbon resource is maximized. Additionally, the Administration will not sell the NPRs for less than the net present value of the NPR revenue stream and other relevant factors under government ownership.

Question: Would you please place in the record your analysis of the costs and benefits associated with:

a) setting up a corporation and selling Elk Hills in fiscal year 1997;

b) setting up a corporation but not selling

c) selling immediately

d) not selling or corporatizing but significantly reducing manpower and operating costs as recommended by the October 1993 Independent Panel Report

Answer: The only analysis that has been conducted to date is that which supports setting up a wholly-owned corporation. All other analyses have been a variation of that report. As you may recall, the Department is prohibited from using non-Government organizations to study the transfer of ownership by sale, lease, or other disposition by P.L. 101-45, Sec. 501 (Dire Emergency Supplemental Appropriations and Transfers, Urgent Supplementals, and Correcting Enrollment Errors Act of 1989). The Department believes, however, that a sale value of $2.6 billion in FY 1997 is reasonable and that, if that price is achieved, it might represent a fair value to the American taxpayer.

The Department has accomplished a number of the recommendations from the 1993 Independent Industry Panel Report. In 1994, NPRC reduced operating costs by approximately $10 million and contractor manpower by 4%, while increasing production 3.1 percent, reversing the historic annual downward trend in production of 8.3 percent. And, while these numbers may seem relatively small, they represent tens of millions of dollars in new out-year revenues and show that the program is working in the right direction, a direction that will continue in FY 1995 and 1996. The Program also initiated processes to reduce burdensome requirements, fix equity, and amend existing legislation to place the operation on a more commercial footing, all recommendations of the independent study groups that reviewed the program.

Fossil Energy is currently working on right-sizing the Elk Hills operation. The approach taken involves participation by the Naval Petroleum Reserves, Chevron U.S.A., and the current operator, Bechtel Petroleum Operations, Inc., in a team that will recommend efficiency improvements in both operating costs and manpower. The parties have met and submitted a three phased plan to reduce the contractor workforce by about 30 percent. The first phase is scheduled to be completed in September 1995.

Operation of Elk Hills

Question: What is the impact of reducing the operations and maintenance budget for NPR-1 and 2 from $116,192,000 in fiscal year 1995 to $78,828,000 in fiscal year 1996?

Answer: The FY 1996 caretaker budget will be augmented with unobligated balances within the Department. Additionally, operating efficiencies will be initiated to reduce costs. There will be minimal impact on the Reserve due to the caretaker budget if these additional funds are available.

Question: What won't you be doing with respect to operations and maintenance?

Answer: There will be little impact on operations and maintenance, assuming that unobligated balances from within the Department are available to augment the caretaker budget along with the implementation of cost savings initiatives.

Question: If no development drilling is done in fiscal year 1996, what short and long-term impacts will it have on the resource?

Answer: Illustrative production decreases caused by a cessation of development drilling at NPR-1, and estimates of associated revenue losses, are provided in the tables below for Fiscal Years 1996 through 1999. Revenues were calculated using current OMB prices for each product: oil prices of $16.66, $17.14, $17.62 and $18.10 per barrel (1996 through 1999); natural gas prices of $2.17, $2.28, $2.38 and $2.47 per million BTU; and natural gas liquids prices of $.40, $.42, $.44 and $.45 per gallon.

NAVAL PETROLEUM RESERVE 1
Lost Development Drilling Production Due to FY 1996 Budget Reduction

DOE SHARE	FY 1996	FY 1997	FY1998	FY 1999
Oil (BOPD)	3,398	5,437	4,350	3,480
Gas (MCFPD)	3,330	5,329	4,264	3,410
NGL (GPD)	21,410	34,256	27,405	21,924

NAVAL PETROLEUM RESERVE 1
Lost Development Drilling Revenue Due to FY 1996 Budget Reduction
Millions $ - DOE ONLY

	FY 1996	FY 1997	FY1998	FY 1999
Oil (BOPD)	20.7	34.0	28.0	23.0
Gas (MCFPD)	2.4	4.1	3.4	2.8
NGL (GPD)	3.1	5.3	4.4	3.6
TOTAL	26.2	43.4	35.8	29.4

Question: What will be the impact of stopping all exploration drilling?

Answer: Exploration at NPR-1 is intended to ensure that all potential petroleum reservoirs are discovered, tested and evaluated for productivity in order to maximize the value of the asset. The exploration process tests geologic and geophysical concepts that may add reserves by delineating drillable prospects. The geology under Elk Hills is extremely complex with many faults, discontinuities, and overthrusts. Even though this field has been intensively developed for almost 20 years, we believe that there are significant exploration opportunities that still remain. It is difficult to quantify the impact of eliminating the exploration program. Given privatization of Elk Hills in FY 1997, ending the exploration program would have little impact.

Question: In fiscal year 1995 you have $14.5 million for development facilities. What are you doing with these funds?

Answer: Planned facilities development in fiscal year 1995 include the following major projects:

24Z Stevens Dehydration Facility Decommissioning*
- Pump-off Controllers, Phase 2
- Stevens Tank Setting Modifications and Loop Lines
- Replacement of Oil and Water Pipelines
- Artificial Lift
- Gas Plant Modifications
- 35R LPG Storage and Loading Facility Upgrade
- Compressor Facilities Modifications and Upgrades
- Facility Environmental Upgrades
- SOZ Condensate Collection System
- Cryogenic Expansion Plant Initial Design
- Closed Loop Gas Lift System Expansion

- Repair and Replace Gas System Pipelines
- Waterflood System Replacement Pumps
- Fresh and Potable Water System Modifications
- NWS/2B Waterflood Expansion
- SOZ Gas/Water Injection Project, Phase 3
- NPR-1 Electrical System Modification and Upgrade
- Well Electrification Program
- Landfill Closures*
- Halon/Fire Alarms
- NPR-1 Sump Netting
- Energy Conservation Program, Phase 2
- Production Operations Data Acquisition
- Compressed Natural Gas Dryer
- 27R Oil Recovery Sump*

* To be financed from Operations & Management

Many of these projects will have their fiscal year 1995 costs funded from earlier budgets.

Question: What amount would be needed for development facilities in fiscal year 1996 if you were to continue activities on schedule, rather than assuming a caretaker budget, and how would those funds be used?

Answer: Development facilities at Elk Hills would be funded at a level of $19 million. Assuming that the field were to continue to be developed and investment capital provided, we would: expand the gas sales capability to eliminate a bottleneck to increased sales of natural gas; provide artificial lift units for new Stevens wells; continue to modify the gas system to meet changing field conditions; and provide for modifications to pipelines and other facilities and unexpected projects. In addition, initial design efforts on the cryogenic project would be undertaken.

Question: What are the near and longer-term impacts of suspending work on development facilities in fiscal year 1996?

Answer: The primary short-term impact would be the inability to continue the necessary repair and modifications to our facilities required to operate efficiently and safely while meeting environmental standards. Also, without a facilities budget, Elk Hills is vulnerable to production losses caused by operational upsets or accidents. A future impact would be the inability to meet planned increased natural gas sales commitments without the expansion project. The bottleneck in deliverability would cause problems with our customers and create an unnecessary burden on us and them. If the cryogenic project were to be cancelled or delayed, we estimate that in fiscal year 1997 alone, 89.5 thousand gallons per day of increased natural gas liquids sales would be foregone, for a revenue loss to the government of between $8.2 to $14.7 million.

Question: Under a caretaker budget, what number of contract staff will you have in fiscal year 1996 as compared with fiscal year 1995?

Answer. Contractor staffing is currently at 730 people. A team comprised of Chevron, Bechtel, and Department representatives recently completed a right-sizing analysis of the Elk Hills operation The team recommended a three phased reduction in contractor staffing totalling about 30 percent The first phase is scheduled to be completed in September 1995.

Contract for Elk Hills Operation

Question. When does the contract with Bechtel, for operation of Elk Hills, expire?

Answer: The contract with Bechtel for operation of Elk Hills expires on July 31, 1995.

Question What will you do between the time that contract expires and the time a government corporation is established?

Answer: Congress provided the Department with the authority to extend the current contract with Bechtel Petroleum Operations, Inc. for two years. Because of the timing uncertainties associated with sale, the Department determined to extend the Bechtel contract for one year, with an option to extend for an additional year. Once these plans are more firmly established, a new contract may be competitively solicited. During the interim period, Fossil Energy will continue its efforts to right-size the operation and implement the recommendations of the Independent Panel of Experts.

Question Chevron, who owns 22 percent of the field, submitted a proposal to you to assume operation of the field. What is the status of that proposal?

Answer The Chevron proposal is no longer being considered by the Department. The Department had determined to recompete the contract after it received considerable interest from industry in competition of the operating contract The Department is working with Chevron and Bechtel, the present M&O contractor, in right-sizing the operation, and the Chevron proposal is being utilized as the template for that exercise.

Question What economies, with respect to staffing and funding, could be achieved under the Chevron proposal?

Answer: In its proposal, Chevron indicated that they could operate NPRC on a more commercial basis for approximately $37 million to $70 million per year less in operations and maintenance costs. The proposal assumed that many Department of Energy requirements would not apply to the new operator. The Department feels the proposal has a great deal of merit and a good number of economies that have applicability to the operation. Fossil Energy is confident that the current right-sizing action will capture those economies available to the Government. It should be noted that the Naval Petroleum Reserves has reduced operating costs by $12.8 million below the baseline established in the original Chevron proposal, and we are confident the current work with Chevron and BPOI will produce even greater cost reductions and savings.

Question: To what extent could those economies be achieved under a contract extension with Bechtel or under a new, competitively awarded contract arrangement?

Answer: As stated above, Fossil Energy feels confident that it can realize many of the economies in the Chevron proposal, and we are currently working to do just that.

Question: What do you see as the major strengths and weaknesses in the Chevron proposal?

Answer: The Chevron proposal is a highly professional and thorough explanation of Chevron's philosophy on how to operate Elk Hills. Its greatest strength is that it uses two methods to evaluate the appropriate size of the enterprise. (1) a zero base build-up of resource requirements; and (2) benchmarking against analog fields and other Chevron properties. It represents a very good template against which the Department can build a lean and efficient operation. Its greatest weakness is the apparent lack of definition and analysis of costs associated with the specific requirements that DOE has as Government owner and operator of the field and as the custodian of the taxpayers' interests in this valuable asset.

Question: What do you hope to gain through a government corporation that you are unable to accomplish now with a contract arrangement?

Answer: We believe that as a government corporation the Reserves could be run more like a business, and produced at a lower operating cost and at greater profitability. Many of the benefits of corporatization could be achieved without corporatizing, but this would require statutory changes. Among statutory provisions needing revision are the requirement to produce NPR-1 at the maximum efficient rate, the limit on per customer volumes of sale, and other restrictions on sales. Other changes that would have to occur in order to realize the benefits of corporatization would require action by the Department on an expedited basis. Among these changes are immediate review and removal of departmental orders and regulations that are non-value added to a commercial oil and gas field, substitution of the current management and operation contract for an operating contract that ties contractor profit to cost reduction and production increases, and final determination of equity interest in NPR-1.

Oil Shale Reserves

Question: No funds are proposed for the Oil Shale Reserves in fiscal year 1996. What is the impact of eliminating this funding?

Answer. The FY 1996 Budget Request assumes sale of the NOSRs 1 and 3 and transfer of NOSR-2 to the Department of Interior. The sooner the NOSRs are sold, the less impact limited funding will have on them. It is assumed that funds will be available under the retained revenues provision for the gas protection program for continued operations and maintenance activities. No further protection drilling or communitizing of wells will be conducted.

Question: How productive are the oil shale reserves?

Answer: Production from the NOSR gas protection program began from NOSR-3 in FY 1990. Through FY 1994, the program has produced and sold 9.8 BCF of gas. FY 1995 production is averaging approximately 10 MMCF/day.

Question: What does the budget assume with respect to when the oil shale reserves will be leased or sold?

Answer: The FY 1996 budget request assumes sale of the NOSRs in FY 1997. Naval Oil Shale Reserve 2 is being proposed for transfer to the Department of Interior.

Question: Who would be prospective buyers for these reserves and what amount of revenues would be generated from a sale?

Answer: Prospective buyers would likely include those oil and gas companies currently operating in the areas surrounding the NOSR's such as Barrett Resources Corporation, Snyder Oil Company, Qxy USA, and Meridian Oil Corporation to only name a few.

Revenues from the sale of the NOSR's will be affected by how the sale is structured. The legislation required to authorize such a sale will likely provide the structure. However, the Department has completed development option studies which consider the most likely sale terms. Our analysis resulted in the following findings in terms of value to the U.S. Government:

Reserve	Sale Price	NPV (@15 percent)*
NOSR-1	$1.2 Million	$4.7 Million
NOSR-2	$2.7 Million	$26.2 Million
NOSR-3	$19.3 Million	$76.7 Million

* Revenues to Federal Government include sale price, royalty, and Federal income taxes.

Question: If leasing is the more likely scenario, what revenues do you estimate would be generated through such an arrangement?

Answer: As with the sale of the NOSR's, revenues from leasing will be greatly affected by the terms and conditions of the lease. The legislation required to authorize leasing of the NOSR's will likely provide this structure. The Department has completed development option studies which consider the most likely lease terms. Our analysis resulted in the following findings in terms of value to the U.S. Government:

Reserve	Net Cash Flow	NPV (@ 15 percent)
NOSR-1	$336.1 Million	$8.9 Million
NOSR-2	$127.0 Million	$27.9 Million
NOSR-3	$259.1 Million	$55.4 Million

Question: To what extent can you enter into lease arrangements under current legislative authority? Please provide the applicable statutory authority for the record

Answer: Section 7422 of Title 10, United State Code, charges the Secretary of Energy with the authority and responsibility, "directly or by contract, lease, or otherwise," to "explore, prospect, conserve, develop, use, and operate the naval petroleum reserves." This section further provides that the naval petroleum reserves shall be used and operated for their "protection, conservation, maintenance, and testing," and production when authorized.

Development of the oil shale reserves is not authorized and production can be established only when protection requirements warrant such. Leasing of the oil shale reserves is authorized only for protection purposes. Therefore, lease arrangements are possible under current legislative authority in 10 USC, Section 7422. However, leasing would be limited to that acreage along the boundary of NOSR-3 which is being drained of natural gas by offset wells adjacent to the reserve. Such limited leasing is not economically attractive to prospective developers.

Question: If leasing is the option pursued, who will manage the property; will it be turned over to the Bureau of Land Management; will DOE maintain control?

Answer: The development legislation that is enacted will specify which Department, Energy or Interior, will manage the properties. Proposed legislation in the Senate calls for transfer of management to the Bureau of Land Management (BLM) while a House version proposes that Energy maintain control. The Department supports the Senate version of the legislation and the transfer of lease management to BLM.

Federal Staffing

Question: Why is there no decrease in Federal staffing proposed for the NPR?

Answer: The FY 1996 budget proposes to sell NPR in FY 1997 in accordance with criteria set forth in legislation now being prepared by the Department, or corporatize if the offers to by the Reserves fail to meet the minimum sales price as established by statute. A decrease in Federal staffing is not proposed for NPR because the workload is not expected to decrease through FY 1996 in order to implement this proposal. Even if operated in a caretaker status, the same technical, financial, environmental, safety, etc., requirements have to be met that are required for normal operations.

Strategic Petroleum Reserve

Overview of Budget Request

Question: How much money will be left in the SPR petroleum account if you transfer $187 Million for SPR operations in fiscal year 1996?

Answer: If $187 million is transferred from the SPR Petroleum Account in fiscal year 1996, there will $24 million remaining in the account at the end of the year. Of the remaining $24 million, $5 million is required to be outlayed each year under terminal contracts to provide distribution capability for Strategic Petroleum Reserve oil in an emergency.

Question: How will you use the money that is left in the SPR petroleum account in FY 1996? How long will that money last?

Answer: In fiscal year 1996, $5 million is proposed to be outlayed under contracts with commercial terminals to provide distribution capability for Strategic Petroleum Reserve oil in an emergency. If $5 million is outlayed each year for terminal contracts, the money will last to fiscal year 2001.

Question: To what extent will you be able to continue to fund SPR operations by transferring funds from the petroleum account in fiscal year 1997 and beyond?

Answer: Fiscal year 1996 will be the last year that significant funds will be available in the SPR Petroleum Account for transfer to the Strategic Petroleum Reserve Account.

Question: Why are your management costs increasing from $16.8 million in fiscal year 1995 to $18,827,000 in fiscal year 1996?

Answer: The difference in the budget requests for management in fiscal year 1995 and fiscal year 1996 reflects the use of prior year balances to partially finance fiscal year 1995 costs. Actual costs are expected to remain about the same from year to year.

Question: What is Oak Ridge National Laboratory doing for you? Funding for that lab increases from $125,000 in fiscal year 1995 to $250,000 in fiscal year 1996.

Answer: The Oak Ridge National Laboratory maintains large sophisticated energy models for the Strategic Petroleum Reserve, including macroeconomic and risk models. These are used for studies of such things as the valuation of drawdown and distribution capabilities, inventory increases, and the optimum size of the Strategic Petroleum Reserve.

The Lab also provides the program with analytic support in economics, oil prices, refining trends, and bidding procedures

The cost of this contract is not growing, but has been declining over the past few years. The request for new appropriations is rising because work was being funded during fiscal years 1994 and 1995 in part by prior year balances. The fiscal year 1996 request for the full amount of the work reflects depletion of those balances.

SPR Authorization

Question: The authorization for the Strategic Petroleum Reserve expires as of June 30, 1996. What are you doing to get a reauthorization so your authority to operate the SPR doesn't expire during fiscal year 1996?

Answer: The Department has already drafted legislation to extend authorities for the Strategic Petroleum Reserve and other programs covered by the Energy Policy and Conservation Act beyond June 30, 1996. The proposed bill will be sent to other Government agencies for review and concurrence in the weeks ahead before its submission to Congress.

Weeks Island

Question: What is the total estimated cost of decommissioning Weeks Island?

Answer: The total estimated cost for decommissioning Weeks Island has fluctuated as new information has been obtained regarding the nature of the Weeks Island sinkhole problem and its remedy. Current estimates range from $75 million to $100 million, depending upon technical options that are implemented and assumptions regarding environmental mitigation requirements.

Question: The budget states that you will need an increase of $60,200,000 to transfer the oil from Weeks Island and to decommission the site. What exactly will you be doing in fiscal year 1996, and what is the cost associated with each of the steps you need to undertake?

Answer: $60.2 million is the estimated cost of the Weeks Island transfer and decommissioning through FY 1996. Some of the cost has been incurred or will by incurred in FY 1995, and has been financed by delaying elements of the Life Extension Program. The total request allows restoration of the funds diverted from Life Extension. During FY 1996 the primary activity will be movement of the oil, which is budgeted for $31 million. During FY 1996 there will also be extensive planning, analysis and engineering design associated with environmental restoration of Weeks Island The total cost estimate for Weeks Island decommissioning is composed as follows:

Weeks Island Decommission Cost
($ Millions)

Site Modifications	$ 3
Oil Pipeline Tie-in	1
Oil Movements	31
Brine Production/Transfer	12
Mine Plugging & Abandonment	23
Surface Facilities Reclamation	2
Ground Water Control	7
Mitigation/Diagnostics	8
Environmental/Legal	2
Total	$89

Question: When did you start the Weeks Island assessment program?

Answer: The Weeks Island sinkhole was discovered in 1992. During 1993, the Department with the assistance of Sandia National Laboratories initiated preliminary geotechnical studies into the nature of the sinkhole and analogous conditions at similar salt mines. In 1994, the Department rigorously pursued investigative activities to determine the cause of the sinkhole and it relationship to an increasing water accumulation in the Weeks Island oil storage chamber. The Weeks Island Mine Integrity Management Group consisting of Department of Energy personnel, geologists from Sandia National Laboratories, and mine engineering consultants was formed during 1994 to create an integrated and highly focused management approach to the Weeks Island situation.

Question: How much money did you spend on this effort in fiscal year 1995?

Answer: The majority of FY 1995 expense will be the creation of "freeze wall" around the sinkhole, and that work is just beginning. The cost during FY 1995 is expected to be around $9 million.

Question: What is the total estimated cost of the relocation and decommissioning effort? How does that break out by fiscal year?

Answer: The cost of decommissioning will be between $75 and $100 million, depending upon the technical approach that is expected such as: the use of water versus brine to flood the mine, sequential versus simultaneous oil removal and mine flooding, and direct pipeline transfer of the oil inventory versus exchange. Our current working estimate is $89 million, as follows:

Weeks Island Obligations
($ Millions)

$5	FY 1994
9	FY 1995
30	FY 1996
32	FY 1997
11	FY 1998
2	FY 1999
$89	Total

Question: When will you complete the project?

Answer: The decommissioning of Weeks Island is currently scheduled for completion in 1998. The transfer of the oil to Big Hill and Bayou Choctaw will occur in 1995 and 1996 after completion of additional water intrusion mitigation measures.

Question: What is the minimum amount of decommissioning funding you could live with in fiscal year 1996, and what would it buy, if the Committee is unable to provide the full amount requested?

Answer: If oil cannot be sold to generate $100 million of receipts in FY 1996, the Department would be unable to proceed with any of the decommissioning activities at Weeks Island beyond actual removal of the oil. Preparation for mine flooding, environmental restoration and site closure would all be postponed. Removal of the oil would still cost about $30 million in FY 1996.

Life Extension

The SPR has a 6 year life extension program to replace or upgrade major systems which are reaching the end of their design life. This program should extend the life of the facilities to the year 2025.

Question: Please describe your life extension program for the Strategic Petroleum Reserve.

Answer: The surface facilities at Strategic Petroleum Reserve sites were designed with an initial life expectation of 20 years. All of the sites are approaching that age, and the facilities are requiring more repair and maintenance to remain operable. A number of failures have already been experienced due to worn out components such as electrical power distribution systems, on-site piping, and brine disposal pipelines. .The Life Extension Program restores all of the critical functions by streamlining, standardizing and replacing obsolete and worn out systems and components. At the end of the process the expected life of the critical systems at all of the sites will be 25 years, and maintenance and repair costs will be reduced.

As examples, during FY 1996 at the West Hackberry site, the SPR plans to redesign and replace the piping and well heads at all of the West Hackberry caverns at a cost of $14 million, and redesign and install new electrical systems for the whole site at a cost of $16 million.

Question: What year of the 6-year program are you funding in fiscal 1996?

Answer: The Life Extension Program is a 7 year program from fiscal year 1994 through fiscal year 2000. Fiscal year 1996 is the third year of the program.

Question: How much money is in the request for this program in fiscal year 1996? How does that compare with fiscal year 1995?

Answer: The Strategic Petroleum Reserve plans to obligate $69 million to Life Extension in FY 1995 and $57 million in FY 1996. Because some of the funds appropriated for Life Extension in FY 1995 are being used for Weeks Island, the borrowed funds will be replaced from funds appropriated for Weeks Island in FY 1996.

Question: For the record, please provide a brief description by year of the Life Extension Program, along with cost estimates.

Answer: The obligation plan for the Life Extension Program is as follows:

Life Extension Plan - Obligations by Fiscal Year
($ Millions)

1994	1995	1996	1997	1998	1999	2000
$43.3	$69.4	$57.4	$56.4	$55.2	$59.2	$20.1

Life Extension Program
Description by year

FY 1995
$69.4 million for FY 1995 includes $.7 to complete the Hot Oil remediation initiated in FY 1994. Of the remaining $68.7 million, approximately $60 million supports major systems at Bryan Mound and West Hackberry including replacement of brine ponds, ordering 5kV switchgear, cavern piping reconfigurations/piperacks, acquisition of pumps and motors, reduced voltage motor starters, and lining brine lines to disposal wells. The balance is for

lining brine lines and piping replacement at Bayou Choctaw, switchgear replacement at St. James Terminal, and design for FY 1996 projects.

FY 1996
$57.4 million includes approximately $49 million for Bryan Mound and West Hackberry to install pumps, 5kV switchgear, crude oil pipeline monitoring, header systems, and a raw water pump station at West Hackberry. The balance is for smaller projects and design for FY 1997 projects.

FY 1997
$56.4 million includes approximately $30 million at Bryan Mound and West Hackberry to complete header system installations, modify oil refill pump systems, and acquire pumps and motors for the Bryan Mound raw water intake structure; $20 million for Bayou Choctaw and Big Hill to replace pumps and motors, upgrade transformers, upgrade control systems, reconfigure piping, cable tray and duct bank systems; and $6 million for FY 1998 project design.

FY 1998
$55.2 million includes approximately $10 million at Bryan Mound and West Hackberry for valves and subsidence mitigation; $38 million at Bayou Choctaw and Big Hill for pump and motor installation, cable tray and duct bank system completions, refill pump system modifications, converting raw water header to brine return header, brine disposal wells, and electrical system upgrades. The balance is for smaller projects and FY 1999 project design.

FY 1999
$59.2 million includes approximately $27 million at Bryan Mound and West Hackberry to continue electrical system upgrades, pipeline valve control systems, install raw water intake structure pumps and motors, replace buried cables, acquire brine lift pumps and motors; $23 million for Bayou Choctaw and Big Hill to upgrade electrical systems, pipeline valve control systems, and complete oil refill pump system modifications, meter system control panel upgrades and brine disposal wells. The balance upgrades electrical systems and pipeline valve controls at St. James and supports FY 2000 project design.

FY 2000
$20.1 million completes the Life Extension Program at all sites by completing electrical system upgrades, wellhead standardization, lining tank bottoms, and planned pipeline replacement.

Hot and Gassy Oil

Question: Since fiscal year 1994, we have been funding a program to remove the excess heat and gas from 145 million barrels of oil at four of the five SPR storage sites. This project is scheduled to be funded through fiscal year 1997. What is the status of your efforts to remove the excess heat and gas from the oil at several of the SPR storage sites?

Answer: A contract for degasification services was awarded on September 12, 1994. Degasification plants are currently under construction. Degasification is scheduled to start in July 1995 and be completed in April 1998. Installation of the heat exchangers at one site is complete with installation at two additional sites scheduled for completion by March 31, 1995.

Question: What amount of money is included in the budget request for this program in fiscal year 1996?

Answer: The FY 1996 request for the gassy oil mitigation program is $15.3 million.

Question: Will fiscal year 1997 be the final year of funding for the program as was originally planned? What amount of funding will be required in that year?

Answer: The gassy oil mitigation program is starting later than originally planned, and will not be completed until FY 1998. The funding requirement is expected to be $8 million in FY 1997 and $2 million in FY 1998.

Question: Will the problem be permanently remedied? To what extent will we have to do this all over again in the future?

Answer: Virtually all of the Strategic Petroleum Reserve caverns generate gas that will recharge the oil in those caverns over time. We expect to have to degas oil approximately every 10 years, if there is no significant inventory turnover in the interim.

Question: What would be the impact of stretching out the funding for this program?

Answer: The contracts for the degassifying services have already been signed, and the equipment is being fabricated. Once the process of degassing starts, the costs of liquidating the contract would probably be close to the cost of actually completing the contract. If the budget for operating the installed equipment were cut, the equipment would sit idle for part of the year, driving up maintenance and other costs. The total cost of the program would certainly rise, and restoration of full SPR drawdown capability would be delayed.

Question: For the record please provide two alternative funding scenarios including descriptions of outyear requirements: one assuming no increase in funding in fiscal year 1996 and the second assuming a 25 percent decrease in funding in fiscal year 1996 as compared with fiscal year 1995.

Answer: The appropriation for FY 1995 was $244 million. A 25 percent reduction would be a budget of $183 million.

A budget of $244 million would require a major reduction of Strategic Petroleum Reserve mission capabilities in order to allow funding to complete the Weeks Island oil removal and decommissioning. The Department would reduce readiness by reducing the number of full time contractor employees by approximately 300, allowing a backlog of maintenance items to build up, and reducing the readiness standard of three or four of the sites to 150-180 days from the current standard of 15 days.

Security would be reduced by 1/3, dropping coverage below the standard for national security assets. Approximately 90 guards would be released.

Life Extention projects that were in progress would be finished, but all other life extension activity would cease. Over time this would cause failure rates to increase and maintenance expense to rise.

The Weeks Island oil removal and decommissioning would be fully funded, the oil removed in 1996 and the restoration and decommissioning would occur by 1998.

If the budget were held flat at $244 million in the outyears, some funds would become available for Life Extension and the maintenance backlog after the Weeks Island Decommissioning in FY 1998. However, failure to implement the planned Life Extension Program in fiscal years 1996-97 would cause increased maintenance backlog and the program would level off at the lower level of drawdown performance capability. In order to prevent that from happening, the outyears would have to be increased by at least the $71 million over the current baseline, to replace any reduction from the FY 1996 budget.

With a budget of $183 million, in addition to the other programmatic reductions, the Department would stop all decommissioning activities at Weeks Island other than removal of the oil.

All of the sites would further reduce engineering and maintenance employees and reduce readiness to no better than a 180 day standard. The Department would then plan either a mothballing or a consolidation to eliminate another site in order to reduce engineering and maintenance expenses. After the consolidation, the Department would request increased outyear financing for the Life Extension Program and an increase in maintenance funding to reduce the backlog.

Need for the Strategic Petroleum Reserve

Question: Why do we still need the Strategic Petroleum Reserve?

Answer: There is still potential for supply disruptions to the world market caused by wars, political and religious unrest, natural disasters and failure in transportation logistics. Also, U.S. oil imports are projected to rise from nearly 50 percent today to about 60 percent by early next century; the world's oil reserves are becoming increasingly concentrated in the highly volatile Persian Gulf region; and U.S. leadership in stockpiling is critical to the accumulation of stocks in other International Energy Agency member countries.

Question: The 592 million barrels in the reserve are equal to 70 days of oil imports. The current capacity is 750 million barrels. What will the capacity be once the Weeks Island site is decommissioned?

Answer: The decommissioning of the Weeks Island site will reduce the overall storage capacity of the Reserve from 750 million barrels to 680 million barrels.

Question: If we sell Weeks Island oil, as proposed by your budget, how many days of import protection will be lost?

Answer: If the Department sells seven million barrels of Strategic Petroleum Reserve oil to finance the decommissioning of the Weeks Island site, approximately one day of import protection will be lost. The Strategic Petroleum Reserve currently could provide about 74 days of import protection.

Question: Why not sell more oil to help solve our deficit problem, which would have the added benefit of saving some of the operational costs associated with the SPR?

Answer: The fiscal year 1996 sale is a one time event brought about in part by extenuating circumstances associated with the presence of the sinkhole at the Weeks Island site. The Strategic Petroleum Reserve is the centerpiece of our energy emergency response plans. We have commitments to the International Energy Program, and our dependence on imported oil is increasing.

Question: Your life extension program attempts to extend the life of the SPR to 2025. Will we need to find new sites for the SPR at that time? Please explain.

Answer: The goal of the Life Extension Program is to upgrade and replace major systems to extend their life to the year 2025. While it is true that major systems may have to be upgraded or replaced once again by the year 2025, we do not foresee that new sites will also be needed unless all caverns have been drawn down the designed maximum of five drawdowns.

Question: Please provide for the record a side by side comparison of management costs in fiscal year 1995 and fiscal year 1996.

Answer: Management obligations for FY 95 and FY 96 are as follows:

	FY 1995	FY 1996
New Budget Authority	$16,780	$18,827
Prior Year Carryover	2,421	0
Total Available for Obligation	$19,201	$18,827
Object Class (Management only)		
Full-time permanent	$9,444	$9,884
Other than full time permanent	46	49
Other personnel compensation	161	170
Civilian Personnel benefits	1,793	2,054
Benefits for former personnel	125	0
Travel and transportation of persons	586	597
Transportation of things	24	25
Rental payments to others	1,158	1,374
Communication, utilities and misc	2,824	2,849
Printing and reproduction	258	266
Consulting services	2,131	1,254
Supplies and materials	55	55
Equipment	546	200
Grants, subsidies, Contributions	50	50
Total	$19,201	$18,827

QUESTIONS SUBMITTED BY CHAIRMAN RALPH REGULA

General

Question: Last week the President concurred with the Department of Commerce's finding that the nation's growing reliance on imports of crude oil and refined petroleum products threaten the nation's security. Yet, while recognizing this threat, the President has not proposed to take any specific corrective actions. Does this finding cause you concern and how do you believe this budget will increase our energy security?

Answer: The budget provides for continued support of Research and Development to increase domestic production of natural gas (which will displace oil in some applications) and oil. Although our dependence on imported oil is projected to grow, the rate of growth will be slowed by enhanced domestic production. The budget also provides for maintenance of our Strategic Petroleum Reserve which is our primary defense against the effects of interruption of oil imports. There are other Departmental activities, such as the "Partnership for a New Generation Vehicle," which could significantly reduce U.S. dependence on imported oil.

Question: What role do you see coal playing in our future energy mix?

Answer: Coal remains the Nation's largest domestic energy resource, far exceeding that of petroleum or natural gas. Almost 90% of the coal produced domestically is used for electric power generation. Currently, over half of the electricity generated in the U.S. is generated from coal. The Energy Information Administration projects that coal's share of the domestic electricity market will remain about constant at least through 2010. But total demand (including exports) will rise by 190 million tons.

Question: Do you believe coal will be an important fuel source for developing nations and if so should we not continue to develop technologies to use coal cleanly and efficiently not only in the U.S. but worldwide?

Answer: The Energy Information Administration (EIA) expects world coal consumption to increase by 32 percent between 1992 and 2010, from 5 billion to 6.6 billion short tons.[1] Increased coal use in China alone is expected to account for about three-fifths of this projected increase. Coal use will also increase in other developing nations such as those in the Pacific Rim and South Asia. The size of the global power generation market is estimated to be over 320,000 megawatts through 2010, with the overall coal market estimated at over $800 billion. Global environmental benefits of Clean Coal Technologies are discussed below.

---

[1] Energy Information Administration, International Energy Outlook 1994, DOE/EIA-0484(94), p.31.

Question: Wouldn't developing these technologies not only help our energy security situation, but contribute to an improved global environment and improved competitiveness for U.S. industries?

Answer: Yes, clean abundant, low cost electricity is vital to helping U.S. industries retain their competitive position in the face of increasing worldwide competition.

With respect to the global environment, as global demand for coal increases, worldwide carbon dioxide emissions per unit of electricity generated will do the same. If all power producers were to use the most efficient clean coal technologies, global carbon dioxide emissions could be cut by more that half, compared with the levels that would be provided by existing power plant technologies.[2] Extensive use of Clean Coal Technologies in lieu of conventional coal technologies would also contribute to major reductions in emissions of SO_2, NO_x and particulates.

Question: Last week at the McElvey Forum one of the panelists suggested that we should and can move to an economy fueled totally by renewable energy and that we should encourage developing nations to totally skip fossil fuels and move into renewables. Could you comment on that -- is that scenario at all realistic?

Answer: The Annual Energy Outlook 1995 recently published by the Energy Information Administration projects that our nation will consume 104 quadrillion btus (quads) in 2010 of which approximately 8.6% would be renewable energy including hydro power. The renewable energy share increased from 7.2% in 1992. The International Energy Outlook 1994 shows quite similar percentages for worldwide renewable energy consumption in 1992 and 2010, respectively.

Some developing nations have access to very large fossil fuel resources that can be utilized in an environmentally sound manner less expensively than renewables. On the other hand, there are circumstances where renewables would be an attractive alternative. It is important that decisionmakers in developing countries have good information regarding potentially favorable renewable and energy efficiency opportunities, and the Department is making a strong effort to provide this information. It is likely that developing countries will continue to rely on all of their domestic resources and will not be able to meet their energy needs with any one fuel resource.

---

[2] U.S. Department of Energy, Clean Coal Technology-- The New Coal Era, DOE/FE-0217P, p.34.

/

Strategic Petroleum Reserve

Question: What are the long range costs of life extension efforts for SPR facilities as four of the SPR sites will reach the end of their design lives by the year 2000? Last year you estimated $365 million, is that still accurate?

Answer: The total estimated cost of the Life Extension Plan has been amended twice. The cost of the total program was increased by $5 million to $370, however, because of the Weeks Island decommissioning, $9 million of life extension at Weeks Island has been eliminated, and the current estimate of the Life Extension Program is $361 million.

Question: Is there still a need for a Strategic Petroleum Reserve?

Answer: Yes, there is still a need for a Strategic Petroleum Reserve. The reserve is still the centerpiece of the United States' energy emergency preparedness. U. S. dependence on imported oil is expected to grow from the current level of 50 percent to 60 percent early next century. United States imports from the volatile Persian Gulf region will continue increasing for the foreseeable future and U.S. leadership in stockpiling is critical to the accumulation of stocks in other International Energy Agency member countries.

Question: What are your plans for the facilities at Weeks Island? Are you still considering using the facilities for research purposes?

Answer: The Department is continuing to evaluate options for use of the facilities at Weeks Island after decommissioning is complete. Use of the facilities for research purposes is still among the options being considered. A public meeting was held in New Iberia, Louisiana, on March 2, 1995, to gather public comments and suggestions for additional options for use of the facility.

Question: What are the budget implications for the SPR program if you don't get authority to sell Weeks Island oil and use the proceeds?

Answer: If the Department does not obtain authority to sell seven million barrels of Strategic Petroleum Reserve oil and use the proceeds, the Department would necessarily reduce Strategic Petroleum Reserve site security, drawdown readiness of delivery systems, curtail maintenance and life extension activities and defer some Weeks Island decommissioning requirements.

A one third reduction in security would result in a reduction of $5 million. Such a reduction would reduce the level of security below Department of Energy standards for national security assets and would cause a reduction in force of 90 guards.

Reducing the number of maintenance workers, as well as maintenance management and support by 300 would result in a reduction of $23 million. This action would require taking three sites off the 15 day readiness standard and converting them to a 150-180 day readiness standard. The initial drawdown capability of the Reserve would drop from 3.5 million barrels per day to 1.25 million barrels per day.

By allowing completion of Life Extension work in progress started in fiscal year 1995, but stopping design, acquisition and construction of other projects, a reduction of $42 million would occur. Site reliability would deteriorate and maintenance costs would rise.

Environmental mitigation activities associated with the Weeks Island decommissioning would be delayed resulting in a reduction of $30 million. Removal of the oil could be delayed, but only at increasing risk of oil loss (endangering about $1.5 billion worth of oil) and resultant environmental damage.

Question: Last year you estimated $63 million would be needed in fiscal year 1996 for life extension. Your current budget proposes only $57.5 million. What are the impacts of your proposal to delay life extension efforts to pay to deal with Weeks Island? Will this increase the costs and does it impose any risks?

Answer: Borrowing money from Life Extention to pay for Weeks Island in fiscal year 1995 will not significantly impact the Life Extension Program provided the money is restored in FY 1996. In order to reduce obligational outlays in fiscal year 1995, the SPR focussed on design of more projects and reduced the amount of actual construction. In fiscal year 1996 the construction will catch up with the design work. This slight delay in construction of Life Extension projects does not pose any risks to personnel or the Reserve's mission capability, or increase costs.

Question: Does this delay your goal of having all major systems replaced or upgraded by the year 2000?

Answer: Provided that funding is provided as requested in the budget, there will be no delay in completion of the Life Extension Program by fiscal year 2000. If the funding is delayed, and funding planned for future years is in turn delayed, then the Life Extension Program will extend beyond fiscal year 2000.

Question: What are your estimated revenues from leasing of St. James terminal and what kind of interest has been expressed from the private sector?

Answer: There was no response to the recent invitation for bids to lease the St. James terminal. Further analysis is underway to assess the feasibility of leasing St. James under current market conditions.

Question: Last year you were also considering leasing pipelines. What is the status of that effort?

Answer: The plan to lease pipelines was delayed due to the potential need to use those pipelines for the movement of brine during the Weeks Island decommissioning. In addition, it became appropriate to lease the pipelines subsequent to the fiscal year 1995 leasing of the St. James terminal. Now that the effort to lease St. James must be reevaluated in the face of no lease bids, plans to lease the pipelines must be further delayed.

QUESTIONS SUBMITTED BY CHAIRMAN RALPH REGULA

NAVAL PETROLEUM RESERVES

Question: The law requires the NPR to operate at the maximum efficient rate (MER). Does this budget allow you to operate at MER and what are the legal implications of not doing so?

Answer: The caretaker budget will allow production at MER at NPR-1 assuming that it is augmented by unobligated balances from elsewhere within the Department and NPOSR cost saving initiatives..

Question. What is the current net profit - return to the Treasury - of the NPR?

Answer: The Naval Petroleum and Oil Shale Reserves has returned to the Treasury $271 million in FY 1992, $233 million in FY 1993, and $166 million in FY 1994. The return to the Treasury is estimated at $245 million in FY 1995. The reduced return in FY 1994 is attributable to low oil prices and one-time investment costs for the cogeneration facility at NPR-1.

Question: How productive is the NPR field and how long is it anticipated to remain productive?

Answer: From the initiation of full development of the Naval Petroleum Reserves in 1976 through Fiscal Year 1994, operations at the six Naval Petroleum and Oil Shale Reserves have generated $16.1 billion in revenues for the U.S. Treasury, against expenses of $3.1 billion The net revenues of $13.0 billion represent a return on costs of 420 percent. The giant Elk Hills field in California ranks as one of the 10 largest fields in the lower 48 states and is only the 13th field in the U.S. to have produced over one billion barrels of oil (in September 1992).

Significant amounts of proven producing reserves of oil and natural gas still remain at these fields and could sustain commercial-level production for another 40 to 50 years. Indeed, within 5 to 7 years, Elk Hills may well be California's largest single source of natural gas and its largest source of associated natural gas liquids (isobutane, natural gasoline, etc). Elk Hills and the three Naval Oil Shale Reserves also present significant exploratory opportunities for additional hydrocarbon reserves that could further add to this total.

Question: Your budget proposes forming a government corporation to manage and operate the NPR. What are the projected administrative costs of establishing this corporation?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. Only if it is determined that the minimum sales price as established by criteria set forth in that statute will not be met, would a Government corporation be established for operation of the Reserves. A Preliminary estimates indicate that new, incremental administrative costs associated with the formation of the corporation would range from $3.5 million to $5.0 million. These expenses are associated with establishing systems of accounts and other start-up operations, acquiring office space, moving expenses, temporary support services, and acquiring data and communications systems. A more complete analysis of start-up costs is being prepared as part of a Business Plan for the corporation, which is expected to be completed by late May 1995.

Question: Do you have a schedule that lays out what needs to be done to form such a corporation and when it needs to be done?

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves to be accomplished in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department. If the offers to buy the Reserves fail to meet the minimum sales price as established by statute, the legislation will also provide the Department the authority to establish a Government corporation. Based on recent experience with corporatization of the Department's Uranium Enrichment Program, it is estimated that a minimum of six months will be required to accomplish the restructuring and have a functioning corporation operating the Reserves. However, it is estimated that a phased transition approach would be taken which would allow key features of the corporation to take effect much sooner.

Question: What are the benefits to the taxpayer of this proposal and was a careful cost/benefits analysis done comparing this alternative -- corporatization and sale -- to other options including immediate sale, corporatization without sale, lease, and options to reduce manpower and operating costs at Elk Hills as recommended by the October, 1993 Independent Industry Panel Report and the recent GAO recommendations.

Answer: The policy for disposition of the Reserves provides that the Department will proceed with the sale of the Reserves to be accomplished in FY 1997 in accordance with criteria set forth in the legislation now being prepared by the Department In addition, this legislation proposes to amend current legislation (such as MER requirements, 20 percent cap on sales to one purchaser, etc.) to allow the Department to operate the Reserves more profitably between now and the time the Reserves are offered for sale. A Government corporation would be formed only in the event bids fail to meet the minimum sales price established in accordance with the statute. There are several benefits to this proposal. If the bids meet the minimum sales price established in accordance with the legislation, then the Government would receive its value in the Reserves immediately rather than over a period of years. It also would allow for the cost and size of the Federal Government to be reduced, and would transfer a commercial operation to the private sector. If the minimum sales price is not met, then the Reserves would be corporatized and operated on a commercial basis, which should increase the revenues to the Government.

A number of alternatives have been examined by the Department regarding how best to manage the Reserves so as to maximize their value as an asset to the Nation. We believe this proposal offers the best opportunity to achieve full value for the Reserves.

As evidenced by the significant reductions in baseline budgets for the Naval Petroleum and Oil Shale Reserves program that have been effected over the past few years, we have been working aggressively to reduce the costs of this program as recommended by the Independent Industry Panel Report and the GAO. The legislation that will be submitted to Congress in the near future will implement many of the industry panel and GAO recommendations.

Question: Could the proposed corporatization occur without a sale?

Answer: Corporatization and sale are independent management options.

Question: If Congress does not approve the proposed corporatization and only provides the requested caretaker budget, would there be any detrimental effects on the oil field both in the long term and the short term? In other words does approving this budget in any way put the resources at risk?

Answer: A FY 1996 budget of $101 million, if not augmented by DOE unobligated balances, would necessitate elimination of all infrastructure and capital investment spending, including new development and exploratory drilling, remedials and well workovers, and facility improvements. Operating the fields in full compliance with all environmental and safety laws and requirements would be our highest priority.

Question: I noticed that fiscal year 1994 production was greater than the year before for the first time since production peaked in fiscal year 1981. To what do you attribute that increased productivity and do you anticipate continued improvements in production?

Answer: Naval Petroleum Reserve 1 (Elk Hills) ended Fiscal Year 1993 with total production at 66,800 barrels of oil per day (BOPD). Historically, production at Elk Hills had declined by about 8.3 percent per year (1984 through 1993 average). However, in FY 1994, through the use of industry-leading technologies such as horizontal drilling, an aggressive program of development drilling, remedials and other production-enhancing projects, and implementation of the principles of Total Quality Management, the 8.3 percent per year average decline in production was completely halted, and in fact production in 1994 increased by 3.1 percent to 68,900 BOPD. The FY 1994 drilling and remedial programs yielded over 7,500 BOPD in new production, recouped their $43 million in costs in only 8 months, and will generate tens of millions of dollars in new net revenues for the Federal government.

Question: Why does your proposed caretaker budget not result in any decreases in staffing?

Answer: We have not completed a detailed staffing study to determine the possible impact of the caretaker budget. Since it is anticipated that the Reserves would be sold in FY 1997, or corporatized if required, a thorough right-sizing analysis is underway to determine the appropriate manpower and organizational requirements.

Question: Given that projected revenues drop by $142 million under a caretaker budget why should we not continue to operate the field as we have been until a final plan for corporatization and/or sale has been agreed to?

Answer: The proposal to operate the Reserves under a caretaker budget is made to provide a reasonable level of continuing effort until the Reserves are sold or corporatized. A caretaker budget provides benefits for the taxpayer when looked at in the larger context of the Department's overall budget and core mission, and the President's policies on eliminating current Federal government activities which are more appropriately performed by the private sector. Assuming that unobligated balances from elsewhere within the Department are available to augment the caretaker budget, there is expected to be little impact on production and revenues.

Question: As there has not been an analysis of the potential sales revenues or value of the reserves done since 1987 wouldn't this be necessary before a sale could be conducted and absent such an analysis how would you establish value for the reserves?

Answer: The only recent information regarding divestiture that has been developed was done in the context of an examination of a number of alternative management structures for the NPOSR program which was requested by the Senate Armed Services Committee in 1993. The Department is prohibited to contract with non-government organizations to study transfer of ownership by sale, lease, or other disposition by P.L. 101-45 (Dire Emergency Supplemental Appropriations and Transfers, Urgent Supplementals, and Correcting Enrollment Errors Act of 1989), Sec. 501. However, analysis prepared in the course of preparing the Organizational Alternatives study indicates that a sale value of $2.6 billion in FY 1997 is not unreasonable and that, if that price is achieved, it might represent a fair value to the American taxpayer.

Question. For the record, please provide what budget would be necessary to meet the MER requirement and maximize return to the government.

Answer: The funding provided below would be required to meet MER requirements and maximize return to the government.

	FY 1996 ($000)
Reserve No. 1&2	
Operations & Maintenance	$98,989
Development Drilling	31,450
Exploration Drilling	3,000
Development Facilities	19,000
Subtotal, NPR-1	$152,439
Reserve No. 3	$15,600
Naval Oil Shale Reserves	$2,700
Program Direction	$6,600
Total, NPOSR	$173.5

This level of funding also would permit the following activities: a 220 well remedial program at NPR-1; a 33 well drilling program at NPR-1, including five horizontal wells; two Stevens Zone exploratory wells; facilities projects at NPR-1; surface resource management at the NOSRs; NOSR operations and maintenance; and an environmental impact statement to update previous NEPA documentation for NOSR- 1 and 3 to include analysis of the impacts of new well spacing requirements in Colorado.

Question: In the near term are there any changes in operations that could reduce the costs and improve efficiencies in operations at the NPR?

Answer: As evidenced by the significant reductions in budget authority for the Naval Petroleum and Oil Shale Reserves program that have been effected over the past few years ($232 million in FY 1993 to $172 million in FY 1995), we have been working aggressively to reduce the costs of this program as recommended by the Independent Industry Panel Report and the GAO. In addition, through the use of industry-leading technologies such as horizontal drilling, and the implementation of the principles of Total Quality Management, the 8.3 percent per year decline in oil production (1984 through 1993 average) at the program's largest facility, the Elk Hills oil field in California, was completely halted in 1994 and in fact was increased by 3.1 percent over FY 1993 levels. These costs savings and production enhancements have created tens of millions of dollars in new net revenues for the Federal government.

Question: What investments that would have been made if the corporatization/sale was not pursued will be foregone with the caretaker budget?

Answer: Assuming the caretaker budget is augmented by unobligated balances from within the Department, the following projects would be considered for investment: expand facilities for gas sales to eliminate a bottleneck to increased sale of natural gas; provide artificial lift units for new Stevens wells; continue to modify the gas system to meet changing field conditions; and provide for modifications to pipelines and other facilities and unexpected projects. In addition, design and long lead-time equipment purchases for the cryogenic project would be undertaken. Development drilling would continue, with a total of 33 new wells drilled into the Stevens and Shallow Oil Zones to expand the horizontal and infill drilling program. Of the 33 new wells, 14 would be new producers in the Shallow Oil Zone, 18 new Stevens producers and one water injection well in the Stevens. Five of the Stevens producers would be horizontal wells and four would be deepenings of existing wells.

Question: What are the benefits of corporatization? Could these benefits be achieved without selling the asset?

Answer: We believe that as a government corporation the Reserves could be run more like a business, and produced at a lower operating cost and at greater profitability. Many of the benefits of corporatization could be achieved without corporatizing, but this would require statutory changes. Among statutory provisions needing revision are the requirement to produce NPR-1 at the maximum efficient rate, the limit on per customer volumes of sale, and other restrictions on sales. Other changes that would have to occur in order to realize the benefits of corporatization would require action by the Department on an expedited basis. Among these changes are immediate review and removal of departmental orders and regulations that are non-value added to a commercial oil and gas field, substitution of the current management and operation contract for an operating contract that ties contractor profit to cost reduction and production increases, and final determination of equity interest in NPR-1.

Question: Under your proposal to corporatize, what is the total projected revenue and how much of that revenue will be earmarked for the Treasury versus reinvested in the oil fields? How does that projected return to the Treasury compare with current operations?

Answer: Based on our analysis of various management alternatives for the NPOSR program, we project that a corporatized NPOSR would earn $13.4 billion in undiscounted gross revenues during the period 1996 to 2040. Costs of operations and capital investments, would be approximately $5 billion. Approximately $8.4 billion would be returned to the Treasury. This compares to approximately $5.3 billion in undiscounted net revenues (gross revenues minus costs) in a "Business-as-Usual" case.

Question: How would the funds that remained in the corporation be used? Specifically what significant investment projects are planned and how do you anticipate these investments paying off in any significant way in one year to improve the value of the asset?

Answer: As evidenced by the increase in production that was achieved at Elk Hills during FY 1994 when funding was provided for aggressive drilling and remedial programs, ample opportunities exist even in the short term to increase the value of the assets and improve near-term cash flow through a series of carefully-planned investments in operations and capital equipment. The FY 1994 drilling and remedial programs at Elk Hills paid off their costs in 8 months. Under corporatization, a comprehensive development strategy would be designed where all of the petroleum and oil shale reserves would be managed as a single business unit for the purposes of maximizing asset value. Project and investment timing would be designed such that the corporation remains self-funding throughout its economic life, and cash flows will have the greatest positive impact on the Federal deficit.

Specific investments that would increase the productivity of the NPOSR include:

Operations and Maintenance, Organizational Cost Savings:

- eliminate contractor award fees; replace with profitability incentives; streamline operator contracts
- flatten contractor and DOE organizations to benchmark with best business practices; eliminate numerous redundant and burdensome DOE requirements that go beyond Federal, state and local commercial regulatory practice;
- reduce operations and maintenance costs

New Reservoir Development at NPR-1:

- Main Body B/31S (Stevens Zone)--patterned waterflood in southeast nose; expanded waterflood in Section 32S
- 31S N/A zone gas cycling project
- various associated produced water disposal projects
- comprehensive exploration in deeper zones

New Facilities Development:

- cryogenic propane storage--takes advantage of large seasonal price swings and allows more product to be sold when prices are higher
- gas separation expander--greatly increases separation efficiency of natural gas liquids from wet gas stream, producing more product for sale
- major gas facilities adjustments--further electrification, high-to-low capacities, increased throughput

- produced water injection (reactivated projects)

- additional gas and oil pipeline connections, meter banks, storage (lease, or repair existing tanks on site)--improves marketing flexibility in wider markets, smoothing vulnerabilities to price volatility)

Remedials, Workovers and Development Drilling:

- funds many new and foregone projects that pay off in generally less than a year; adds value to the long term reserve base

Marketing and Legal Capabilities:

- new marketing, legal and contracting staff, associated data services and communications equipment, in concert with facilities enhancements, builds a more alert, aggressive and flexible marketing and sales force to increase prices received for products

Naval Oil Shale Reserves:

- combines drainage protection with full development of the oil and natural gas resources at NOSRs 1, 2 and 3

- exploratory and development drilling to validate the conclusions reached by recent United States Geological Survey/DOE task forces and greatly increase reserve base

- pipelines--new field gathering lines and connections to commercial infrastructure; increased throughput and marketing flexibility

- numerous new gas wells, with total cash flows for all three NOSRs positive by 1999; combined with all other operations, however, the cash flow for the entire NPOSR enterprise remains positive from 1996 through 2040.

Question: You request $78 million to operate the NPR at Elk Hills in fiscal year 1996, compared with the $164 million that was appropriated for fiscal year 1995. How much of this saving will be achieved from reductions in personnel? For the record please provide the estimated number of DOE, Bechtel and contractor employees you anticipate will be working at Elk Hills during fiscal year 1996 and compare that to the number currently employed.

Answer: Operation under a resource level of $101 million would result in a reduction in investment at the field and lowered operating costs. However, we intend to augment this resource level unobligated balances. At $101 million, the largest portion of the reduction in the operations and maintenance budget, $20 million, would occur from the elimination of remedial and workover projects on producing wells. This work is conducted by specialized outside subcontractors, not by the operating contractor, so few employees on the field would be affected. The additional reduction in operations and maintenance budget of $17.4 million would occur from anticipated increases in operating efficiencies and improved field maintenance practices; contract reform initiatives; reduction in electricity costs from the operation of the cogeneration plant; and a reduction and use of uncosted obligations as a source of financing. The full effects of reduced funding under a resource level of $101 million on employment in the field are being analyzed at this time. Preliminary estimates indicate that staffing at Elk Hills can be reduced up to 30 percent from the 730 currently on-board in a three phased reduction operation. Similar right-sizing activities are underway at Teapot Dome.

Clean Coal Technology

Question: While your budget does not specifically propose a rescission for clean coal technology funds, DOE has made reference to returning unused funds to the Treasury and $300 million has been mentioned. Is this $300 million based on specific projects being canceled or is it a very rough estimate of funds that could remain unexpended?

Answer: It is a very rough estimate of funds that could remain unexpended after all the critical project go/no-go decisions have occurred. Our experience to date clearly shows that project schedules and prospects can change dramatically over time. Therefore, we do not believe that funding should be reduced in anticipation of what might happen in the future. Instead, we believe the projects should be allowed to proceed with the expectation that funding will be available provided that they comply with the terms and conditions in each Cooperative Agreement.

Question: Is it fair to say that rescinding $300 million based on what is currently known about existing projects could result in a shortfall of funds for ongoing projects?

Answer: Yes, a rescission at an early stage in the progress of many of the projects could easily jeopardize important work as they approach their latter stages.

Question: Does the government have any liability with respect to existing projects under contract?

Answer: The CCT Cooperative Agreements permit disapproval of a continuation application for a particular projection the basis of lack of appropriated funds. Thus, DOE's liability exposure should be limited to no more than the Federal contribution obligated for the current budget period, if DOE was required to cut off funding.

Question: Last year you assumed a fiscal year 1996 budget request of $74 million which would cover potential cost growth and program direction, yet you have only requested $45 million in fiscal year 1996. Is this sufficient to cover current obligations including cost growth and program direction or is this a very bare bones budget, and what are the risks of approving this budget to the ongoing projects?

Answer: The amended request for Clean Coal Technology is $10 million. The $10 million requested in fiscal year 1996 is lower than the estimate made last year because we now have more accurate schedule and financing information, especially for the projects selected under the fifth solicitation. We believe that the budget request is adequate to support potential cost growth, program direction, and ongoing projects during fiscal year 1996.

Question: For the record could you comment on the commercial successes of technologies funded under the clean coal program.

Answer: The following are a few examples of how clean coal technologies are being used in the marketplace:

- The Babcock & Wilcox Company has installed the low NO_x cell burner technology on more than 2500 MWe of capacity in the United States, with each installation achieving more than 50 percent NO_x reduction. Low NO_x cell burner retrofits have been ordered for an additional 3250 MWe.

- The Babcock & Wilcox Company has sold 85 contracts (61 domestic and 24 international) for the DRB-XCL^R low-NO_x burners demonstrated by the Public Service Company of Colorado.

- Foster Wheeler Energy Corporation has had about $20 million in sales of the low NO_x burners demonstrated on Georgia Power Company's Plant Hammond in Coosa, Georgia.

- Successful testing of the AirPol, Inc., demonstration project resulted in the City of Hamilton, Ohio, receiving a $5 million grant from the Ohio Coal Development Office to install the Gas Suspension Absorption technology for flue gas desulfurization on a 50-MWe coal-fired boiler at the City's municipal power plant.

- In April 1994, a project company of Pure Air entered into a contract to provide 1,600 MWe of SO_2 scrubbing capacity at Florida Power & Light's Manatee power plant.

- Ohio Edison Company decided to retain for commercial operation the ABB Environmental System's SNOX™ system at its Niles Station as part of its Clean Air Act Amendments of 1990 compliance strategy. Also, commercial SNOX™ plants have been started up in Denmark and Sicily.

- A decision was made to retain for commercial operation the flue gas recovery system for SO_2 reduction demonstrated at the Passamaquoddy Tribe's 1,450 ton-per-day cement plant in Thomaston, Maine.

- As a result of the Nucla CFB Demonstration project (110 MWe), Pyropower Corporation, the technology developer, was able to advance by 3 years a commercial line of atmospheric circulating fluidized bed units. Pyropower's follow-on commercial units are being sold under warranty in sizes up to 400 MWe.

- Use of commercial version of the Babcock & Wilcox Company's successfully demonstrated Limestone Injection Multistage Burner in an independent power production project in Canada.

- The first commercial sale of the Coal Quality Expert Acid Rain Advisor software package, demonstrated in the Coal Quality Expert Project, was made in 1993.

Question: Have any of these successes translated into international sales—in other words have clean coal technologies begun penetrating the international market place?

Answer: Yes, several of the technologies being demonstrated in the Clean Coal Program have begun penetrating the international marketplace. This is particularly true with the coal preparation technologies. For example, the Custom Coals Corporation leads an international consortium to construct a $886.6 million coal slurry pipeline in China. The project includes construction and operation of a coal cleaning plant that will use proprietary coal cleaning technology developed by Custom Coals in conjunction with the U.S. Department of Energy in the Clean Coal Program. SGI International, the industrial participant and owner of the technology being demonstrated in the Encoal Clean Coal Technology Demonstra-tion Plant, is performing feasibility studies on a 6,000 metric-ton-per-day liquids from coal plant in Shandong, Providence of the People's Republic of China, and on two 5,000 metric-ton-per-day plants in Sumatra, Indonesia. Other technologies demonstrated in the Clean Coal Program experiencing success in the international marketplace include circulating fluidized-bed combustors, low-NO_x burners, limestone injection multistage burners (LIMB), the CT-121 flue gas desulfurization system, and a cement kiln flue gas recovery scrubber.

Advanced Emissions Control Development Program

Question: In fiscal year 1994 and 1995 $1.6 million was provided to support operations of an air toxics emissions facility. The facility is being constructed without government funds and is also receiving funding from the state of Ohio. Fiscal year 1996 was intended to be the third and final year of government participation and yet your budget includes no funds to complete this partnership. What has been the nature of DOE's participation to date?

Answer: DOE has participated, or will participate as a funding partner in all three phases of the project. While the facility was originally constructed without government funds, government funds were used in modifications necessary to conduct the work planned. Phase I consists of the installation, shakedown, validation and benchmarking of the equipment necessary to conduct the air toxics work, including an ESP, fabric filter, and a wet scrubber. Current government funding (FY 1994 and FY 1995, $3.2 million) will cover budget period 1 through December 1995.

Question: What do you see as the benefits to DOE from participating in this project?

Answer: The objective of this project is to develop practical, cost effective strategies for reducing the emissions of hazardous air pollutants from coal-fired power plants. The need for these strategies is expected to arise as the U.S. Environmental Protection Agency proceeds with implementation of requirements of the Clean Act Amendments of 1990. This project will provide DOE with useful information to be passed on to the electric utilities for use in responding to these future regulations.

Question: What would be lost to DOE if the final $1.8 million is not made available to this project?

Answer: The specific objectives of the project are:

- Develop a flexible, representative test bed for conducting air toxics emissions control work.
- Measure and understand production and partitioning of air toxics species for a variety of Ohio coals.
- Optimize the air toxics removal performance of conventional flue gas cleanup systems.
- Quantify the impacts of coal cleaning on air toxics emissions.
- Develop advanced air toxics emissions control concepts.

The work at this site is at a scale of 1-2 mw. Without this facility work will be done at a smaller bench scale.

Coal Research and Development

Question: Your budget proposes significantly reducing efforts in coal Research and Development. For the record please provide a prioritization of which efforts your budget proposes to terminate and what would be the highest priority for continuing if funding were made available.

Answer: We believe the Coal Research and Development budget, as submitted, supports a reasonable and balanced program responsive to key Research and Development priorities. As stated in our FY 1996 budget request, the highest priority coal Research and Development programs (after the completion of the current 45 projects in the Clean Coal Technology Program) are those in the power generation technology area.

The principal programs in the power generation area with lower budget requests in FY 1996 (compared to FY 1995) in highest priority order are:

- Wilsonville PSDF (FY95: $29.7M; FY96: $24.0M)
    - Project request is sufficient to pursue a reasonable level of effort.
- LEBS (FY95: $6.4M; FY96: $5.0M)
    - Will down select from the current three contractors to one.
- B&W Air Toxics (FY95: $1.6M; FY96: 0)

The major reductions in the FY 1996 request compared to FY 1995 appropriations are in the coal fuels Research and Development area. With 88 percent of the coal mined in the U.S. in 1993 being used for electric power generation, coal fuels Research and Development was of lower priority than power generation Research and Development. The principal programs in the coal fuels area with lower budget requests in FY 1996 (compared to FY 1995) in highest priority order are:

- Direct Liquefaction (FY95: $9.8M; FY96: $5.1M)
    - Project request is sufficient to support a benchscale research program. HRI proof-of-concept work will not be supported if world oil prices are projected to remain low out to 2010. Proof-of-concept scale work can be deferred to a later time. Did not

include funding for liquefaction consortium developing technology for utilizing plastic wastes to produce fuel (FY95: $1.8M; FY96: 0)

- Indirect liquefaction (FY95: $12.6M; FY96: $5.8M)
  - Project request is sufficient to suport a benchscale research program. LaPorte proof-of-concept work would not be supported for same reasons given for direct liquefaction.
- Coal Preparation (FY95: $7.2M; FY96: $4.9M)
  - Completed the planned "high efficiency" coal cleaning Research and Development.

The lowest priority activity in the Coal Research and Development Program is mild gasification (FY95: $5.0M; FY 96: 0). DOE low prioritization of mild gasification was supported by the recent National Academy of Sciences' review of the Coal Research and Development Program.

Question: Your budget would eliminate a number of activities in coal liquefaction including terminating proof-of-concept testing at HRI and LaPorte, all advanced research in coal liquefaction and the ongoing partnership with the consortium for fossil fuels. Why is liquefaction taking such a large hit, and could you prioritize the liquefaction efforts that will be discontinued?

Answer: The core research efforts (including the consortium work) would have higher priority than HRI and LaPorte.

Question: Your budget proposes to terminate the cooperative efforts with WRI and UNDEERC, but would double the cooperative effort with Historically Black Colleges and Universities. What is the rationale behind this proposal?

Answer: The rationale is founded upon where these institutions are in regard to ability to compete for funds offered either through Government mainstream competitive procurement process or for funds/support available through the private sector. WRI and UNDEERC have received millions of dollars of support per year over a decade and would appear to be positioned now to compete. Historically Black Colleges and Universities (HBCUs) which represent a large number of institutions have been allotted a far lesser amount of funding over fewer years. Significant progress by the HBCUs is being made, as measured by number of quality proposals received and private sector interest, but additional support in fiscal year 1996 is judged to be crucial toward realizing the goal of mainstreaming the HBCUs.

Question: What is the impact of downselecting to one contractor at this phase of the LEBS program?

Answer: Each industry team is following a different approach in the design of their LEBS plants and there are limited data available at this time to determine which approach is best. If downselection were to occur now, there is a danger that the best approach would not be selected and the selected approach might not find market acceptance. However, we believe this increased risk is manageable and the funding request is reasonable given funding constraints.

Question: What did the original program plan envision and what would be the added cost of keeping all three contractors involved? Two contractors?

Answer: The original plan called for 15% cost sharing in phases II and III with a downselection from 3 to 2 contractors after Phase I and to one contractor after phase III. Phase IV cost share was a minimum 25%. In the revised plan to continue all three contractors through Phases II and III, minimum cost sharing was increased to 25% for Phases II and III and 50% for Phase IV. The added cost under this plan for continuing with 3 contractors in FY 1996 is $14.1 million and for 2 contractors $4.3 million. The toal DOE costs for FY 1997 thru FY 1999 for 3 contractors are estimated at $26.1 million and for 2 contractors $25.1 million, compared to one contractor cost of $18.7 million.

Question: Is there any likelihood that the cost-share could be increased to keep more contractors involved?

Answer: The minimum cost-share already has been increased from 15% to 25% for Phases II and III of the LEBS Program and from 25% to 50% for Phase IV. We believe it would be difficult to obtain further increases in cost-sharing for these phases of work.

Question: What would be the cost savings to the Advanced Turbine Systems (ATS) Program if only one industrial and one utility turbine technology were selected at this phase of the program? What would be the disadvantages?

Answer: Proposals for the component development (Phase III) and demonstration (Phase IV) phases of the Advanced Turbine Systems (ATS) Program are currently under evaluation and negotiation. The ATS Program plan assumed, for both the industrial and utility area, multiple technology developers would be selected for component development (Phase III), with a down selection to one technology developer for the pre-commerical demonstration (Phase IV).

The ATS program plan assumed that up to three technology developers would be selected in the utility area for component development (Phase III). The estimated program cost is $127.2 million (DOE funding) for three developers. Reducing the program to one developer would result in a net savings of roughly $62 million for component development (Phase III). No cost savings would result in the pre-commercial demonstration since the program plan assumes only one technology developer would be supported.

Funding for the industrial turbine developers is provided from the DOE Office of Energy Efficiency and Renewable Energy (EE), Industry Sector, Cogeneration Program. The program is similar to the utility program in that multiple developers were planned for component development. Specific cost savings estimates for the industrial program should be obtained from EE.

What would be the disadvantages? Down selecting to one contractor for the utility area will impact the ATS Program and potentially impede the commercialization of ATS technology. Down selection at this time is premature and will significantly reduce, to only one, the number of potential commerical ATS systems. Specific disadvantages include:

o No alternative in the event the selected concept encounters technical difficulties (unavoidable cost growth or schedule slippage).

o Eliminates competition between developers and, thus, slowing the need to bring the technology to market.

o Impedes technology transfer because technology developed by the one developer may not be licensed to others.

Oil and Gas

Question: Your budget proposes to initiate Class IV recovery field demonstrations. What is the total cost of the class estimated to be and what is the estimated improvement in terms of recovery from this effort?

Answer: DOE plans to provide $30 million for Class 4 with a minimum of 50 percent industry cost sharing required, bringing the total project values to $60 million. The funding profile for Class 4 is $1.2 million in fiscal year 1994; $4.5 million in fiscal year 1995; $6.05 million requested in fiscal year 1996; and outyear requirements of $18.25 million. Class 4 will demonstrate technologies to recover additional oil from Strand-plain and Barrier Island reservoirs. These reservoirs are located in Alabama, Arkansas, California, Colorado, Illinois, Kansas, Louisiana, Mississippi, Nebraska, New Mexico, Oklahoma, Pennsylvania, Texas, Utah, and Wyoming. Analyses by the DOE's Tertiary Oil Recovery Information System (TORIS) suggest that this reservoir class contains about 3 billion barrels of oil potentially recoverable at an oil price of $20 per barrel by application of advanced recovery technologies. Of this volume, almost 2 billion barrels is at risk of abandonment before the year 2000. Assessments of the impact of implementing advanced technologies nation-wide suggest that Class 4 reservoirs could produce an additional 350,000 barrels of oil per day, resulting in $300 million additional Federal and State revenues each year.

Question: Why is continuing these class field demonstrations a priority and how much has been spent in total on these demonstrations?

Answer: The U.S. has about 23 billion barrels of remaining proved reserves using conventional recovery technologies, about 8 years worth of production at current rates. About two-thirds of all discovered oil remains in reservoirs after conventional recovery. Existing domestic reservoirs have the potential to produce 12 to 17 billion barrels of additional oil at current prices ($12 to $20 dollars per barrel) if advanced technologies are applied. The field demonstration program endeavors to reduce the risk in applying these technologies by conducting demonstrations in partnership with industry. The program has focused on the reservoir classes with the largest potential impact. The first five classes contain almost 75 percent of the remaining domestic oil that is a target for advanced technology. The 33 projects selected as part of the first three class competitive solicitations will require $120 million in Federal financial support.

Question: What has been the estimated improvement in recovery from the DOE effort?

Answer: The program is in its infancy in that only 8 of the 24 projects active at this time have been operative for more than two years (another 9 projects are expected to start between March and July 1995). Demonstrations of near-term technologies are expected to show incremental recovery within three years and mid-term technology demonstrations will require up to five years. However, the most successful projects should generate more taxes and royalties than the entire program cost.

For example, Lomax Exploration Company is demonstrating the application of waterflooding in fractured Uinta Basin reservoirs with waxy oils, reservoirs previously considered unsuited to waterflooding. The Lomax project is projected, based on results to date, to produce 2.4 million barrels of oil, resulting in over $12.7 million in taxes and royalties. Eleven new waterfloods in the basin that were prompted as a direct result of the Lomax success are projected to produce 31 million barrels of additional oil, providing taxes and royalties of over $150 million. This basin contains additional reservoirs amenable to this technology, suggesting even larger future taxes and royalties.

Cogeneration

Question: What are the legal requirements governing purchase of power by electric utilities from non-utility generators?

Answer: Section 210 of the Public Utility Regulatory Policies Act of 1978 (PURPA) requires that a utility offer to purchase power from certain non-utility qualifying facilities under the law at a rate that does not exceed the avoided cost of electric energy to the utility. Qualifying facilities (QFs) include certain cogeneration facilities and small power production facilities. Cogeneration facilities produce electricity and some other useful form of thermal energy such as steam or heat. PURPA requires that QFs not be paid a rate that would exceed the cost that the utility would not incur to generate the capacity itself or purchase from another source, i.e. the avoided cost to the utility. In a recent decision, the Federal Energy Regulatory Commission (FERC) said that the avoided cost must be established through a process that reflects prices available from all sources able to sell to the utility whose avoided cost is being determined.

Electric utilities may also purchase electricity from non-utility generators that are not qualifying facilities. Federal law does not require that a utility offer to purchase power from these suppliers.

QUESTIONS SUBMITTED BY CONGRESSMAN SIDNEY YATES

Fossil Energy Research and Development
Mild Gas Termination

Question: The budget proposes to terminate the cost-shared mild-gasification process development unit at Southern Illinois University. Department of Energy funds already available total $14.1 million. Private industry will have $3.5 million in the project. Isn't this project authorized by section 1304 of the Energy Policy Act?

Answer: Yes, this project falls under section 1304 which authorizes the Department to conduct RD&D programs in non-fuel uses of coal, including coke production and other carbon products produced from coal.

Question: Why are you willing to throw away the private money already invested in this project?

Answer: Mild gasification technology is a lower priority activity within the coal R&D program, with advanced power systems being the highest. In an era of constrained budgets, funding for lower priority projects must be reduced. Since all of our PDU scale development projects are cost shared, private money would be at risk whatever project, this one or some other one.

Question: What signal does this send to other potential partners in your research program?

Answer: All organizations engaged in research and development, industrial or Government, recognize that the funds involved are risk monies, and that individual projects are subject to termination for any number of reasons, including funds availability. Projects involving Government funds have been curtailed or terminated because of funding decisions by the private partner(s), so this is not a one-way process. Although painful, all parties involved recognize the risks of research, and we believe that other potential partners in our research programs will not be much influenced by individual project terminations.

Question: The principal result from MILDGAS technology is the environmentally safe production of coke for use by our steel and foundry industry. Taking into account the Clean Air Act Amendments (CAAA) of 1990, which impose strict standards on future emissions from coke-oven batteries, future coke production in this country will be constrained and the industry will be forced to increase its reliance on imported coke, which most likely will not be produced in an environmentally acceptable manner. Is it this Department's position to support technology that is not environmentally sound?

Answer: Clean environmental performance is a major goal for all of the Department's coal research and development programs. Nevertheless, the area of mild gasification is of lower priority than power generation research and development (88% of the coal mined in the U.S. in 1993 was used to produce electricity). It is not possible to fund all promising technologies.

Argonne National Laboratory

Question: Please provide for the record a summary table detailing how Argonne National Laboratory funding is treated in your FY 1996 request for Fossil Energy.

Answer: The following is a summary table detailing the proposed FY 1996 funding for Argonne National Laboratory in the Fossil Energy Research and Development account.

	Estimates FY 1996
Coal Research and Development	
Advanced Research and Technology Development	$1,520
Advanced Clean Efficient Power Systems	250
Total Coal Research and Development	1,770
Oil and Gas Research Development	
Natural Gas Research	950
Fuel Cells	1,094
Oil Technology Development	1,455
Total Oil and Gas Research and Development	3,499
Fuels Programs	387
Total Fossil Energy Research and Development	$5,656

Advanced Computational Technology Initiative (ACTI)

Question: The budget includes $14 million for the advanced computational technology initiative, an increase of more than $10.5 million above the 1995 level. The justifications indicate that the Department has yet to identify the National Laboratories that will be involved with the initiative.

-- What work has the Department accomplished to date this year on the initiative?
-- What are obligations so far in 1995?
-- What documentation do you have to support the National Laboratories ability to absorb such a large increase when the Initiative is just now getting started?

Answer: A detailed implementation plan was completed in May 1994 that describes an integrated program with Defense Programs, Energy Research, and Fossil Energy participation. A call for proposals was issued in September 1994. A total of 122 proposals, with a value of approximately $180 million, was received on November 1994. Proposals have been evaluated and 31 were selected in January 1995, for DOE funding. FE funding of $7.547 million from the Natural Gas and Oil Programs has been obligated to the National Laboratory contracts for funding the first year of nine projects and participation in the funding of two others with Defense Programs Office. The National Laboratories which received Advanced Computational Technology Initiative funding in fiscal year 1995 were: Argonne National Laboratory, Brookhaven National

Laboratory, Idaho National Engineering Laboratory, Lawrence Berkeley Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Oak Ridge National Laboratory, and Sandia National Laboratories. Pacific Northwest Laboratory did not receive any projects in this first solicitation, but is eligible in the future.

All Fossil Energy funds for Advanced Computational Technology Initiative, $7.547 million, have been obligated. Notifications have been sent to the 56 collaborators in the 11 proposals that FE is participating in funding. These include Universities, Independents, Majors, Service Companies, Consultants, Trade Organizations, and Others.

The interest among stakeholders in this initiative has been demonstrated by the 122 proposals received in response to the 1995 call for Advanced Computational Technology Initiative proposals. Although the Advanced Computational Technology Initiative is just getting started, the National Laboratories have historically had workloads that were significantly higher than those proposed in this Initiative. These proposals included a total of $86 million requested from DOE, which the laboratories were prepared to manage. However, the selection process and limited 1995 funding, resulted in awards of $27 million in DOE funding. Further, not all the funds in Advanced Computational Technology Initiative are expended at the National Laboratories, since 20% of 1995 funds are going to Universities.

Clean Air Act Regulatory Impacts

Question: On page 13 of your statement you indicate that the 1990 Clean Air Act Amendments have placed a $37 billion regulatory requirement on U.S. refineries.

- Can you provide details on the nature of the requirement and on how and by whom the $37 billion estimate was developed?

Answer: On June 25, 1990, the Secretary of Energy requested that the National Petroleum Council (a federal advisory committee) undertake a study of the U.S. refinery sector. The request cited, among other things, new environmental requirements for transportation fuels, and requirements under the Clean Air Act which would directly impact refineries, and asked that the Council report on the ability of the industry to respond to these changes.

In August 1993, the Council submitted a six volume report to the Secretary. The report concluded that "In the 1991-2000 decade, the U.S. refining industry will need to make capital expenditures of about $37 billion (1990 dollars) to meet refinery regulatory requirements, and to manufacture reformulated gasoline and ultra-low sulfur diesel fuel." The report also noted that the book value of the existing refineries is only $31 billion. This is the source of the citation on page 13 of my testimony.

Upon reflection, I should make a clarification to the language in my testimony. The capital costs reflect all environmental requirements, not just the Clean Air Act. The NPC study indicates that about two-thirds of the environmental capital expenditures for the 1991-2000 time period are for Clean Air Act compliance (Figure 6 and Table 3, Summary

Volume). Second, the testimony incorrectly indicated that the $37 billion figure represented total compliance costs. As noted above, this figure reflects only capital costs; and excludes operation and maintenance costs, and one-time expenditures which are not capitalized.

A copy of the summary volume of the NPC report is attached to provide additional information.

Headquarters Program Direction

Question: Madam Secretary, at a time when downsizing and reinventing government are the rage, why does your budget for headquarters program direction, plant and equipment increase by nearly $I million, including $75,000 for video conferencing and $900,000 worldwide connection of computers on the Internet? (Page 112 of justifications).

Answer: Both are examples where costs incurred now can lead to significant savings. Specifically:

Video Conferencing -- The Office of Fossil Energy is located in seven states and the District of Columbia stretching from coast to coast. For Fossil Energy to function as a cohesive organization employees need to meet and discuss various work topics. In these times of tight budgets and streamlining of organizations, it was imperative for Fossil Energy to do more with less. As a result, Fossil Energy has reduced it's travel budget by 10% in FY 1996. To compensate for this reduction and provide the same quality products and services, Fossil Energy introduced a system of video conferencing which allows the employees to confer with each other at various sites across the U.S. without incurring travel costs. Through the use of video conferencing Fossil Energy employees can get the job done without wasting time travelling to various sites and incurring any travel related expenses. The FY 1996 investment in this capacity will return significant savings in this fiscal year and in years to come. Also, it is permitting Fossil Energy headquarters and field site officials to interact with each other more frequently than has been the case in the past, improving coordination and streamlining decisionmaking.

Internet -- The Internet global network offers an unprecedented tool to disseminate information on taxpayer-support technology and programs to a huge audience more efficiently and at lower costs than have been historically possible through traditional dissemination techniques.

Growth of the Internet has been phenomenal; currently, more than 30 million people worldwide have access to the network and nearly a million people a month are being added to the user community. It is not unlikely that, in the foreseeable future, the Internet will become the principal means for researchers, engineers, and the general public to obtain information and research products from the Office of Fossil Energy. Rather than relying on expensive "hard copy" distribution of technical reports and other documents, the Internet offers the opportunity to create an electronic "library," accessible 24-hours-a-day, 7-days-a-week. From their computer terminal, users will be able to browse key subjects, as their interests dictate, and select the level of technical information they wish to obtain.

Making an electronic version of a document available to potentially millions of users offers the potential for tremendous savings in both costs and labor compared to the resource-intensive ways we disseminate information today (i.e, abstracts, technical reports, bulk mailings, publication subscriptions, technical journals, etc.). Therefore, the Office of Fossil Energy is proposing to make the investment in FY 1996 in the necessary equipment and software that, over the next few years, will return much larger savings in terms of reduced time and expense of hard copy printing and distribution.

After running a series of trials this year, we are convinced that the Internet has the potential to fundamentally restructure the way we disseminate information. Therefore, the FY 1996 budget proposes several expenses -- many of which are one-time costs -- necessary to establish a full-fledged information system on the Internet. Costs have been projected for the following categories:

Network Servers ($225,000) -- These are the computer hardware systems necessary to store information and process user requests. Given the expected electronic "traffic" and multi-media requirements, these systems must be, by necessity, powerful workstations. Included in our planning is a World Wide Web Server, a USENET server, and a Gopher server (the latter to support the less sophisticated capabilities typical of many international customers in developing countries). There would also be one "hotfix" server which would act as a completely configured spare for immediate deployment when one unit goes down. Each of these units would be a Risc 6000 workstation (a powerful type of personal computer), supported by uninterruptable power supplies and tape backup capabilities

Dedicated Circuits ($150,000) -- The Fossil Energy Internet network would access information at the DOE headquarters, the Morgantown Energy Technology Center, the Pittsburgh Energy Technology Center, and the Bartlesville Project Office. To achieve seamless high-speed transfers of data to the user from each of these sites, dedicated circuits are required to link all of the headquarters and field servers. This amount is for Internet provider services to Fossil Energy and high-speed date connections between field sites.

Local Area Network "Backbone" Improvements ($250,000) -- Some improvements to the central circuitry that forms the "backbone" of the Fossil Energy local area network will also be required to enable additional bandwidth. Similar improvements are underway or planned in the Office of Energy Research and the Office of Defense Programs. These improvements are necessary to support digitized video and multi-media applications.

Network Security ($175,000) -- The viability of the Internet as a reliable means of disseminating information can be compromised if adequate security measures are not installed to prevent electronic tampering of data and operations. This cost component includes the purchase and installation of routers (to filter unwanted access), electronic authenticators, and software security to assure that server postings from field offices are secure.

Software ($100,000) -- Another value of the Internet for disseminating information is that the electronic document processing can be done by a wide number of DOE and contract employees (in contrast to the bottlenecks encountered in preparing, typesetting and printing documents through traditional printing processes). To distribute the capability for authoring and preparing these documents, multiple copies of software packages must be purchased for use by DOE headquarters and field personnel. In addition, Fossil Energy employees should have access to the Internet as a way to acquire information not only about the Fossil Energy program but also in related scientific and technical areas and to communicate with others in the fossil fuel technical community. In this connection, the budget request assumes the purchasing of Internet communications software, e-mail enhancement, file viewers and other licensed software for 250 users.

With the exception of the dedicated circuits (which are a yearly service provider fee), the other Internet costs are projected to decline by approximately 90% in the out-years. In future budgets, only 10% of the FY 1996 funding for server hardware, security, network improvements and software will be required, primarily for maintenance and upgrades.

Cooperative Research and Development

Question: After seven years of funding, including $9 million in each of fiscal years 1994 and 1995, DOE is proposing to terminate the fossil energy cooperative research and development program in 1996.

- What have been the principal successes of this effort?

Answer: The Cooperative Agreements were initiated to assist UNDEERC and WRI in their transition to the private sector. Although the Federal funding remained relatively constant through the years, UNDEERC and WRI were able to leverage these funds to substantially increase their total business. Perhaps the most revealing measures of progress towards the self-sufficiency goals of the assistance programs are the steady growth of industrial interest in the Jointly Sponsored Research (JSR) Programs. In FY 1994 the non-Federal cash cost-shared was $3.1 million and $0.51 million for UNDEERC and WRI respectively.

Some technological successes of the program include Fossil Energy technology transfer to environmental and waste remediation technologies such as remediation of contaminated sites, waste plastics recycling, acid-mine drainage mitigation, and wood-fired gas turbine development.

Question: What is the estimated impact of the proposed termination on your research partners?

Answer: Although it could lose several of its Fossil Energy research and development staff, UNDEERC has become self-sufficient enough to compete for contracts in the regular procurement process and would survive as an organization. WRI may lose up to 50 of its personnel as a result of the proposed termination. However, WRI has developed some strength in the liquid fuels, environmental remediation, and waste management areas and may also be able to attract significant commercial funding in the absence of Federal funds. Therefore WRI as an institution would probably survive.

Fossil Energy Environmental Restoration

Question: The continuing cleanup of Hoe Creek, Wyoming has consumed $2 million annually in 1994 and 1995. Why does the 1996 request increase to $5 million for the ongoing cleanup.

Answer: Activities at Hoe Creek have focussed on: (1) characterization of the nature and extent of contamination; (2) development of cleanup alternatives; and (3) implementation of limited groundwater pump and treat remediation to prevent offsite migration of contaminated groundwater until a final remedy is selected. In FY 1995, DOE and the State of Wyoming are expected to decide on the permanent remedial action for Hoe Creek. The alternatives under discussion range from approximately $7.5 million up to approximately $70 million. The budget request of $5 million in FY 1996 is based on selection of the lower cost alternative consisting of bioremediation/pump and treat/vapor extraction of groundwater contamination. The increase in funds from FY 1995 to FY 1996 is due to the implementation of the more resource intensive phase of activities associated with the permanent remedy, and reflects requirements to meet the State's mandate and avoid notices of violation.

Clean Coal Technology Program

Question: Concerning the Clean Coal Technology Program, your statement indicates the "Given the high-risk nature of these projects, some likely will terminate." Without mentioning specific projects what do you think is the probability certain projects will not go forward?

Answer: DOE has used a probabilistic approach to estimating its funding needs for the Clean Coal Program. The results of this analysis was reported to Congress in May 1994. This approach looks at each project and assesses the likelihood of the project going to completion and the Government cost shared funds necessary to complete the project. The individual project estimates are then used as part of the probabilistic evaluation to give overall program needs. This type of analysis is a tool for assessing overall program needs and tries to estimate the cumulative impact of decisions which will be made in the future. The projects in the program are in different levels of completion from those in their operating periods to those, from the last solicitation, which have just begun design activities. Individual project progress is, therefore, difficult to assess and predict.

Question: What is your best estimate of funding that will not be required in 1995 and future years due to the termination of projects?

Answer: DOE has estimated that up to $300 million may be left over and returned to the Treasury from the Clean Coal Program. This estimate is based on DOE's assessment of future project decisions and is included in the May 1994 Report to Congress.

Question: H.R. 845, the rescission bill scheduled for House Floor consideration rescinds $200 million ($50 million which was to become available in fiscal year 1996 and $150 million available in 1997) in clean coal funding. In your opinion, will the rescission of these funds have any programmatic impact on clean coal technology projects?

Answer: The $200 million rescission is not expected to prevent the Department from meeting any funding commitments to projects which will continue to completion. (Note: The H.R. 845 Rescission Bill was merged with H.R. 889, the Defense Supplemental Appropriations Bill. The Bill is now referred to as H.R. 889.)

Question: Your statement indicates the program's revised funding profile is $45 million in 1996, $115 million in 1997, and $27 million in 1998, a net decrease of $301 million from the existing profile. What would be the impact if the Congress were to rescind all funding not included in the new funding profile?

Answer: The amended FY 1996 Budget Request for Clean Coal Technology is $10 million. Rescinding only $200 million as proposed by HR 845, in lieu of rescinding the entire $301 million not included in the Department's revised funding profile, will allow more time for the projects to evolve. These CCT projects are first-of-a-kind commercial scale efforts and involve significant development risk. The Government's role in the CCT Program is to promote the technology development by cost-sharing some of this development risk. DOE believes that this objective can best be met by maintaining the financial flexibility to meet its commitments to our industrial partners. Rescission of the full $300 million at this time would affect our ability to live up to this commitment.

QUESTIONS SUBMITTED BY CONGRESSMAN SIDNEY YATES

Naval Petroleum Reserve

Question: You mentioned earlier that the Department of Energy would like to set up a Government Corporation for a year in order to assess what the Naval Petroleum Reserve (NPR) total assets are so you can then privatize/sell. Does it make any sense, if you were a private corporation, to purchase a business with only one year of recorded assets?

Answer: The Department and the Administration have amended the approach for disposition of the Naval Petroleum and Oil Shale Reserves. The revised strategy provides for the Department to sell the Reserves at a fair market value, in FY 1997 and to corporatize only if the minimum sales price is not met. Legislation is being prepared which (1) authorizes the Department to prepare a sales strategy and put the Reserves on the market, at a minimum price to be determined in accordance with criteria set forth in the statute; (2) amends current legislation to allow the Department to operate the Reserves more profitably between now and the time the Reserves are offered for sale; and (3) if the President determines that offers to buy the Reserves fail to meet the minimum sales price established in accordance with the criteria set forth in the statute, authorizes the establishment of a Government corporation. We believe that this strategy provides a more logical approach to maximizing the value of the Reserves.

Strategic Petroleum Reserve Management Costs

Question: Management costs for the Strategic Petroleum Reserve increase $2 million in 1996, representing growth of 12 percent above 1995 and 19 percent above 1994. Especially since FTEs are declining, what are the reasons for this large increase? Provide detail on the management costs including object class summary and personnel distribution by grade.

Answer: In FY 1995, we are utilizing $2.4 million in prior year balances to offset total management requirements of $19.2 million. These carryover funds will not be available for use in FY 1996. Therefore, our management obligations are actually decreasing from $19.2 million in FY 1995 to $18.8 million in FY 1996. Management obligations (by object class summary) and current on-board personnel distribution are provided below.

	FY 1995	FY 1996
New Budget Authority	$16,780	$18,827
Prior Year Carryover	2,421	0
Total Available for Obligation	$19,201	$18,827
Object Class (Management only)		
Full-time permanent	$9,444	$9,884
Other than full time permanent	46	49
Other personnel compensation	161	170
Civilian Personnel benefits	1,793	2,054
Benefits for former personnel	125	0
Travel and transportation of persons	586	597
Transportation of things	24	25
Rental payments to others	1,158	1,374
Communication, utilities and misc	2,824	2,849
Printing and reproduction	258	266
Consulting services	2,131	1,254
Supplies and materials	55	55
Equipment	546	200
Grants, subsidies, Contributions	50	50
Total	$19,201	$18,827

Personnel distribution (total 165):

ES-5	1	GS-13	45	GS-07	9
ES-4	3	GS-12	30	GS-06	9
ES-3	1	GS-11	3	GS-05	11
GS-15	12	GS-09	3	GS-03	1
GS-14	31	GS-08	3	GW-02	3

TUESDAY, MARCH 28, 1995.

ENERGY CONSERVATION

WITNESSES

CHRISTINE A. ERVIN, ASSISTANT SECRETARY FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY

TOM GROSS, DEPUTY ASSISTANT SECRETARY FOR TRANSPORTATION TECHNOLOGIES

ROBERT KRIPOWICZ, DEPUTY ASSISTANT SECRETARY FOR BUILDING TECHNOLOGIES

DENISE SWINK, DEPUTY ASSISTANT SECRETARY FOR INDUSTRIAL TECHNOLOGIES

GAIL McKINLEY, OFFICE OF TECHNICAL AND FINANCIAL ASSISTANCE

Mr. REGULA [presiding]. Well, we'll get the hearing for the Interior Subcommittee on Appropriations started.

We're happy to welcome you today, Assistant Secretary Ervin and Deputy Assistant Secretary Tom Gross and Deputy Assistant Secretary Bob Kripowicz. It seems I've seen you somewhere before. [Laughter.]

Your full statement will be put in the record, and also the biography of Mr. Kripowicz, who has new responsibilities.

Ms. Ervin, I think yours was put in the record before?

Ms. ERVIN. Yes.

Mr. REGULA. Mr. Gross, you're probably in the record, too. And we want to save paper, so we only put the new ones in.

[The prepared statement of Ms. Ervin and additional witness biographies follows:]

Statement of Christine A. Ervin
Assistant Secretary for
Energy Efficiency and Renewable Energy
Department of Energy
FY 1996 Appropriations Hearings
March 28, 1995

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to discuss the Department of Energy's FY 1996 budget request for Energy Efficiency programs of $890.6 million. The programs the Subcommittee is responsible for will enable consumers and businesses to choose those energy services that best fit their needs while lowering costs, facilitating economic growth, and lowering energy-related pollution. This is accomplished through a balanced portfolio of research, development, and technology deployment programs that together will save consumers and businesses more than $18 billion in energy costs and create 260,000 jobs by the year 2000.

Our portfolio of programs produce substantial domestic economic benefits that are public in nature, which the private sector, therefore, cannot be expected to capture fully. Our programs lead to economic growth and job creation -- for U.S. business, energy efficient technologies can lower operating costs and raise productivity. The investment and spending increases that are made possible from energy savings will create jobs and make industry more productive domestically and more competitive globally.

We believe that our programs will help attain our desired goals of economic security and environmental quality for our Nation and its citizens. With oil imports at record levels, our programs to develop and improve energy efficient technologies and alternative fuels will reduce import dependence and the vulnerability of the U.S. economy from future oil price volatility. An additional environmental benefit provided by our programs is enhanced environmental quality in our cities and our Nation without costly mandates. Our technologies provide win-win solutions and are the best alternatives to costly environmental legislation.

While the long-term benefits of our programs are substantial, we are delivering meaningful results today. For example, in the mid-1980's, American taxpayers invested several million dollars to develop electronic ballasts, which improve the efficiency of lighting systems by up to 30%. The technology had been plagued by technical failures that prevented the industry from producing it commercially. Facilitated by the DOE research, electronic ballasts successfully entered the market and today account for 23% of ballasts sold, generating an estimated $700 million in energy savings for the same taxpayers who funded the original research. More broadly, we have developed and facilitated the introduction of 130 new energy technologies that are commercially available today. In other areas, 1200 private organizations have joined together to form 34 "Clean Cities" to promote the use of alternative fuel vehicles. Each year, more than 115,000 low-income homes are weatherized, which lowers energy costs, and improves safety and comfort for low-income families. Based on investment facilitated by the Federal Energy Management program since the late 1970's, the Federal government will save more than $500 million in energy costs over the next two years. Achieving these results consistently has been the key to the long-term success of our programs.

As we continue to pursue these objectives, we are very conscious about how we deliver our programs. We employ four main business principles, which are: 1) Our programs are designed to stimulate and complement the private sector -- not replace it. We design our programs to ensure that the Department's role is essential and unique, and that we are not doing something that the private sector or other public agencies are already doing, or could do better. 2) We seek a minimum Federal presence. Whether our objective is a breakthrough technology or a better-insulated residence, it is our partners who are empowered to do the job. Also, we believe that voluntary partnerships are a viable alternative to traditional government mandates and regulation in most areas. 3) We use small amounts of Federal funding to leverage large private investments. Virtually all of our research is cost-shared by industries, utilities, or other partners. 4) We believe in setting clear goals so that we may be held accountable for the results of our programs.

Transportation Technologies

The Department requests $258.5 million for programs managed by the Office of Transportation Technologies (OTT). This increased level of resources reflects the importance of continuing to build a solid foundation for a "revolution" in transportation. The percentage of U.S. oil use which we import has recently passed the 50% mark; it is projected to exceed 60% before the year 2010. To counter this trend, we must develop and deploy advanced vehicle technologies with radically improved fuel economy; understand the unrelenting growth in vehicle miles travelled; and accelerate the introduction and widespread use of fuels other than petroleum. While reducing our import vulnerability is vital to our national interests, current price signals make fuel economy very low on the list of attributes consumers seek when making vehicle purchases. Thus, the automotive industry and its suppliers are not inclined to make the required high-risk investments on their own.

The Partnership for a New Generation of Vehicles (PNGV), for which the Department of Energy is the major contributor, provides a mechanism to properly integrate government and industry efforts needed to achieve major travel economy advances in light duty vehicles. PNGV goals and our DOE program goals were similar when the PNGV program was announced--and continue to be closely linked. Therefore, DOE has worked closely with industry and other agencies on PNGV planning--and we are integrating our own OTT activities so as to increase the probability of successfully achieving an 80 miles per gallon mid-size sedan. The funding, $192.6M, requested for Heat Engine Technologies, Electric and Hybrid Propulsion Development, and Materials Technology supports working in partnership with industry on technology development and solutions. The concept underlying our budget request is support for development and proving of needed technologies. The next step for these technologies, commercialization, will be carried out by the private sector.

The FY 1996 budget request for development of advanced vehicle propulsion technologies is $188.8 million. Activities which also support the Partnership for a New Generation of Vehicles, which will be 50% cost shared by private funds, accounts for the majority of this budget, $161 million. The thrust of this effort is the development of the mid-size, 80 miles per gallon prototype car by 2003 with no sacrifice in safety, cost, or performance. To meet this goal, DOE's program will fund a number of technology development efforts including lightweight materials, fuel cells, fuel reformers, hybrid propulsion systems, and improved vehicle energy storage.

Competing successfully with conventional propulsion systems and fuels will continue to be a daunting challenge. Our current cars and trucks have the benefit of decades of refinement in design, materials, and production techniques; reliability; low operating costs; and ease in refueling. Changing current fuel use and emissions projections will require successful development and deployment of new vehicle technologies. This is an endeavor that will require sustained commitment, significant investment, and willingness to pursue multiple technology paths.

The objective of the Alternative Fuels Utilization FY 1996 programmatic request of $55.6 million is to reduce our dependence on imported oil, as well as environmental emissions, through economical introduction and commercialization of alternative transportation fuels. Achieving this objective will require the establishment of sustainable alternative fuel and vehicle production industries, and extensive private sector investment in supporting infrastructure. Markets for the products of these industries will be based on the confidence of consumers in the performance, reliability, and cost-effectiveness of those products. This program is about building that confidence by weaving together a variety of activities.

-- Fleet owners, fuel providers, vehicles manufacturers, and State and local governments will be encouraged to cooperate on voluntary programs, which can accelerate the growth of alternative fuel vehicles by assuring initial markets.
-- Based on test and marketplace results, improvements will be made in vehicles through research, development, and further testing.
-- Current, accurate, reliable information on alternative fuels, and the vehicles which operate on them, will be made available.
-- Rigorous, structured programs to test and evaluate alternative fuel vehicles, and to compile the resulting data, will provide the best available information.

With fleets paving the way for higher volume, lower cost vehicle production, and the installation of refueling capability, the goal is to make alternative fuel vehicles the choice of many individual private vehicle purchasers by the year 2000.

A successful example of how we strive to make our programs work can be illustrated by our Clean Cities program. The Clean Cities program is a government and industry based partnership, coordinated by DOE, to expand the use of alternatives to gasoline and diesel fuel. By the end of 1994 this program had created partnerships in 34 cities throughout the country and garnered voluntary commitments for 300,000 alternative fueled vehicles by the year 2000. This program, in concert with our federal vehicle purchases and our other activities within the Alternative Fuel Vehicle program, is the anchor of our whole approach of attaining a cleaner urban environment and reducing our dependence on imports.

As our transportation system incorporates new propulsion technologies and fuels, the American economy and environment will realize significant benefits. It is estimated that by the year 2000 the impact of these programs could save consumers $1.8 billion through reduced energy costs, create over 62,000 new jobs, reduce petroleum use over 75 million barrels per year, and decrease environmental emissions by more than 6 million metric tons.

Industrial Technologies

The Office of Industrial Technologies (OIT) helps American industry develop energy efficiency and renewable energy technologies that can lower costs, increase productivity, and prevent pollution. Since its inception in 1976, the Office of Industrial Technologies has helped industries develop and adopt new technologies through programs that produce more than $2 in economic benefits for every $1 in Federal spending. Since 1978, the office has invested $1.1 billion in Federal funds, which produced more than $3.4 billion in energy savings and increased capital productivity for American industries. These programs helped increase employment in the industrial sector in 1993, and prevented 7.3 million tons of carbon dioxide and many regulated pollutants.

In FY 1996, we are proposing a budget of $172,867,000 to support base programs, to increase the most successful programs and to support a consolidated effort responsive to the needs of energy- and waste-intensive industries. This request represents an increase of $37,674,000 over the FY 1995 budget. Significant areas of activity are the Advanced Turbine System program ($26.0M), the Partnership for a New Generation Vehicle ($12.7M), and the Environmental Technology Partnerships ($15.7M). The FY 1996 investment provides one of the best returns for the American taxpayer because our programs help lower costs while retaining and generating new jobs.

OIT's strategy for working with the nation's most energy- and waste-intensive industries is called Industries of the Future. This strategy helps align DOE's scientific and engineering resources and expertise with the research needs of the chemical, pulp and paper, petroleum refining, steel and aluminum foundries, and glass.industries to identify profitable new and cleaner technologies. These industries, comprising small, medium and large businesses, collectively employ 4.2 million workers, consume more than 80% of the energy used by U.S. manufacturers, produce more than 95% of industrial waste and air emissions, and account for 40% of U.S. manufacturing investment. The health of these industries is essential for maintaining a sound national defense capability.

Gas turbine technology is now meeting two-thirds of the demand for new capacity and the need to upgrade or replace existing steam powerplants. Increases in Advanced Turbine Systems (ATS) reflect OIT's participation in a joint 8-year, public-private partnership to develop an advanced gas turbine that will significantly improve overall thermal efficiency. Central to this effort are improvements in high-temperature materials, which offers critical support for the advanced turbine effort. The ATS partnership of more than 100 members includes many corporations, universities, EPA and DOE's Fossil Energy.

OIT is supporting the national Partnership for a New Generation of Vehicles by developing new technologies in the areas of materials, manufacturing, and recycling. The need for this program derives from the simultaneous effects of global cost competition, increasing environmental concerns and the need for cleaner and "greener" vehicles. OIT is developing new, economic and cleaner manufacturing technologies with specific goals of saving energy and reducing residues of obsolete vehicles which may be otherwise land filled. These contributions support the partnership and enhance the competitiveness of the U.S. auto industry.

As part of the Industries of the Future strategy, the Environmental Technology Partnerships will place additional resources to expand activities already in the base program or new, promising activities fitting the industry view of technologies needed in the future. Through partnerships, industries with vision and R&D agendas could compete for funds to develop systems-based approaches that reduce wastes and lessen environmental damage. This voluntary program with industry encourages participation with DOE, the DOE laboratory system and multiple segments of industry.

To conclude, OIT programs produce results. Our programs are expected to reduce annual industrial primary energy consumption by 0.70 quadrillion Btu in 2000 and four quadrillion Btu in 2020, including about 146 million barrels of oil. Annual use of renewable energy in industry increases by 0.69 quad by 2000, 1.3 quads by 2010, 1.9 quads by 2020. The programs reduce annual emissions by nine million metric tons of carbon-equivalent in 2000, 34 million metric tons in 2010, and 70 million metric tons in 2020, with associated decreases in regulated air, water and toxic pollutants. OIT programs are expected to result in savings of $3 billion in direct energy costs annually by 2000, $13 billion by 2010, and $24 billion by 2020 (in 1992 dollars).

Building Technologies

Energy consumed in buildings is 36% of all U.S. energy use, with a total bill of close to $200 billion each year. To capture the tremendous opportunities to lower energy costs, the DOE operates a strategic array of programs in the buildings sector, including collaborative deployment of high efficiency technologies, minimum efficiency standards for equipment and buildings, research and development on advanced technologies, and the Federal Energy Management program. The FY 1996 request for programs in these areas is $152.5 million, an increase of $36.9 million from FY 1995 appropriations. These investments, co-funded heavily by private partners, are expected to save consumers more than $13 billion annually by 2000.

The technology deployment programs focus both on introducing specific technologies through programs such as the Technology Introduction Partnership program, as well as targeting individual markets for energy efficient technologies. OBT's key programs focused on existing commercial buildings and housing are described below. Rebuild America is the office's flagship for deploying technologies in existing commercial buildings through public/private partnerships at the regional and local level. The request for Rebuild America rises in FY 1996 to $19.8 million. The Rebuild America partnerships include community organizations, private businesses, utilities, and others working together to promote building retrofits for commercial buildings. These retrofits will save businesses an estimated $650 million in annual energy costs by 2000, and increase workers' comfort and productivity. The Energy Partnerships for Affordable Homes program is the office's key program for dramatically improving the efficiency and affordability of U.S. homes by working together with builders, States, utilities, HUD, equipment retailers, and others. The request in FY 1996 is $12.1 million, which includes funding for five key areas: 1) promoting a nationally consistent home energy rating system; 2) supporting the expansion of financing products for energy efficiency; 3) providing education and recognition for energy efficient builders; 4) working with retailers to promote energy efficient products; and 5) providing training and other assistance to HUD and Habitat for Humanity to lower the energy costs of low-income housing. Within 5 years, this program will lower energy costs for homeowners and tenants by $1.2 billion annually, as well as increase their safety and comfort.

Complementing these deployment programs is OBT's Congressionally-mandated energy efficiency standards for equipment and buildings. In FY 1996, we request $11.8 million for Building Standards and Guidelines to assist States in upgrading their building codes. The request for Lighting and Appliance Standards remains virtually unchanged at $10.4 million in FY 1996. Efforts are underway to streamline the rulemaking process and promote a consensus-building standards development process, as was achieved this year for refrigerators.

The third key component of the building sector request is our industry-supported research and development, increasing to $42.6 million in FY 1996 from a FY 1995 level of $36.5 million. Research and development ensure that improvements in building efficiency are sustained and continue in the long-term. Funding for buildings R&D includes programs to develop new technologies, as well as programs that seek to improve the whole building efficiency through improved construction techniques, system integration, and designs. Some examples are described below. The Building America supports industry consortia that are working to develop integrated construction practices, which will result in new homes that use 50% less energy, produce 50% less construction waste, and cost no more to build. The Lighting Research Program will work with industry to develop light sources that consume 50% less energy than conventional lights. This will include continued development of the Sulfur lamp, demonstrated this year in the Smithsonian's Air and Space Museum. The Windows and Glazings program will include a government-industry partnership to commercialize electrochromic windows by FY 1999, potentially reducing lighting and air conditioning use by 20%. The Thermally Activated Heat Pump program will continue to work collaboratively with the gas industry to complete development of with both residential and commercial building applications. These new heat pumps can reduce energy used for heating and cooling by 50%, eliminate the use of CFCs and HCFCs, and lower carbon and other emissions by 60% versus conventional technology.

The final component of the building sector request is the Federal Energy Management Program (FEMP). The FY 1996 request for FEMP is $25.4 million, up 8% from FY 1995. FEMP's efforts have already helped to reduce federal energy costs by more than a half billion dollars over the last two years. With a new emphasis on the use "Energy Savings Performance Contracts" which "privatize" the retrofit of federal facilities, the results can be significantly increased. FEMP will make projects happen that will save taxpayers $400 million annually in 2000 and that number will increase to $1 billion annually by 2005. Also by the year 2000, FEMP will achieve a 20% reduction in the energy use of the federal agencies, create 10,000 new jobs, leverage more than $1 billion in private sector investments and prevent the release of 30 million metric tons of carbon equivalent and other pollutants. The FY 1996 budget for the Federal Energy Efficiency Fund alone will reduce the government's energy costs by $150 million through by awarding to agencies 100-150 grants that leverage more projects.

Technical and Financial Assistance

The FY 1996 budget request for the Office of Technical and Financial Assistance is $321.2 million, less than 1% over the FY 1995 Appropriations. The Office operates financial incentive, technical assistance, and information programs, for states, local governments, nonprofit organizations, inventors and individual consumers. Through state and local partnerships these programs enable states and localities to deliver energy services to consumers in their jurisdictions.

The Department has requested $229.0 million for the Weatherization Assistance Program. This request allows for the continuation of the formula change which would maintain the cold weather state programs while providing greater equity through increased funding to warm weather states, as directed by this subcommittee. To date, the Weatherization Assistance Program has lowered the energy costs of more than 4.4 million homes. A comprehensive evaluation of the program's effectiveness conducted by Oak Ridge National Laboratory (ORNL) demonstrated that the typical single-family household experienced a reduction of 18.2% in its space heating energy consumption as a result of weatherization, saving 17.6 Mbtu of energy. The typical household weatherized in 1989 had an annual income of only $7,641 so that savings on this scale had a significant positive value to the household's budget, as well as conserving energy. In FY 1996, the program will weatherize more than 116,000 homes, support over 17,000 jobs and save 0.002 quads of energy. State and local agencies have leveraged more than $200 million each year to increase the number of assisted homes to about 230,000 annually. The FY 1996 funding (DOE Appropriation plus leveraged resources) will produce $1.9 billion in energy cost savings and a reduction of 5.2 million metric tons of carbon emissions cumulative over the next 20 years.

The Department has requested $24.7 million for the State Energy Conservation Program (SECP) which provides cost-shared grants to states to develop and implement energy management programs that reflect their unique energy needs, circumstances and opportunities. Since 1983, the program has implemented over 8,000 projects and leveraged $19 for each $1 of SECP appropriated funds. The program will continue assisting states to achieve their goal of a 10% or greater improvement in energy efficiency by 2000.

The Department has requested $26.8 million for the Institutional Conservation Program. It provides cost-shared (50/50) grants as an incentive for schools and hospitals to make cost-effective improvements in their building envelopes, mechanical systems and operations and maintenance procedures. From FY 1979 through FY 1994, $947 million in appropriations have resulted in cumulative savings of $6.1 billion in nearly 70,000 buildings. In FY 1996, the program will support improvements in 1,254 schools and hospitals, which is expected to result in energy cost savings of $14 million in the first year and will support 1,190 jobs.

The Department has requested $1.8 million for the Municipal Energy Management Program (MEMP) which supports local government projects that demonstrate innovative, realistic strategies to help communities become more energy efficient and promote economically and environmentally sustainable growth. Through FY 1994, the program has leveraged $4 for each $1 of grant funds.

The Department has requested $8.8 million for the Energy Related Inventions and Innovation Program which will continue to provide financial and technical assistance to small businesses and individual inventors. The $3.0 million increase over the FY 1995 appropriation will support the solicitation of proposals for the Partnership for a New Generation of Vehicles Initiative and the Industrial Pollution Prevention Initiative. Since its inception in 1975, the program has made $42 million in technology development grants, with a return of $31 in benefits for every dollar invested. The annual income tax revenues generated from the sale of products and services through this program are now greater than the program's yearly budget.

Utility Program

The electric utility industry has entered a period of dramatic change, moving toward a competitive structure. States, and the utilities that serve them, are looking to the Department's Integrated Resource Planning/Demand-Side Management Program for assistance in finding new ways to plan for and acquire resources to meet customer needs in this competitive environment. These changes are placing enormous burdens on state governors, legislators, and regulators, all of whom share an interest in providing for constructive change in this complex area. As a result, our Integrated Resources Planning program has received greatly increased demands on its resources from every stakehold group. The budget request for FY 1996 of $9.9 million, an increase of $1.1 million over FY 1995, reflects the Department's attempt to respond to this need. The FY 1996 Program is being reoriented to provide much more direct service to states and utilities through technical partnerships with states, a voucher program to provide direct financial assistance to state agencies and public power utilities for technical training, and a state innovation program to support market-based approaches to meeting resource planning objectives. The Program also will provide critical funding for the National Association of Regulatory Utility Commissioners and the National Conference of State Legislatures through a collaborative effort called the National Council for a Competitive Electric Industry. Finally, the FY 1996 request would provide continuing support for the Department's well-regarded work supporting demand-side management data collection and program evaluation tools and techniques for customer-supported DSM programs.

International Market Development

Many domestic energy efficiency firms have emphasized to us that strong domestic and international markets go hand-in-hand. To strengthen our domestic industries, international market development activities capitalize on the growing opportunities for U.S. energy efficiency companies in global markets -- markets that currently exceed $80 billion per year. The FY 1996 budget request of $5.1 million is an increase of $2.2 million, which will ensure that the programs can provide industry-requested export assistance and eliminate market barriers. The request includes $1.9 million for the Committee on Energy Efficiency Commerce and Trade (COEECT) to expand the scope of activities and provide coordinated support to encourage U.S. energy efficiency exports. The $0.9 million requested for the valuable Energy Efficiency Centers will ensure continued access for U.S. firms. The Energy Efficiency Center in the Czech Republic has already assisted one Texas firm obtain $30 million of energy efficiency service contracts. --- The tax revenue to the United States treasury from these contracts alone is greater than $1.5 million, the original government funding for all the centers combined -- not to mention jobs we create here and abroad and the foothold we gain in a huge foreign market. In fact, if we can help our industries gain just six one-thousands of one percent more market share in foreign markets for our products -- a figure I'm sure we can exceed -- These revenues will equal our modest spending in this area.

Mr. Chairman, thank you for the opportunity to testify on behalf of our programs. I will be happy to answer questions.

U.S. Department of Energy
Office of Public Affairs
Washington, D.C. 20585
202/586-3640

BIOGRAPHY

ROBERT S. KRIPOWICZ

Robert S. Kripowicz was appointed Deputy Assistant Secretary for Building Technologies in January 1995. The Office of Building Technologies, within the Office of Energy Efficiency and Renewable Energy, is responsible for DOE's programs to increase the energy efficiency of the nation's residential and commercial buildings. Programs include research and development on advanced heating and cooling systems; solar systems; high efficiency lighting, windows, and equipment; and advanced building materials, designs and manufacturing techniques, as well as responsibility for Congressionally mandated deployment of energy efficient building codes and appliance standards.

Previously, Mr. Kripowicz was on the staff of the Interior and Related Agencies Subcommittee of the Committee on Appropriations in the House of Representatives. On the Subcommittee he was responsible for appropriations for many DOE programs such as energy efficiency (including building technologies), fossil energy, clean coal technology, and Strategic and Naval Petroleum Reserve activities, as well as energy, scientific, and land management programs of the Department of the Interior. He also served as Staff Director of the Energy Subcommittee of the Committee on Science and Technology in the House, responsible for energy efficiency, renewables, fossil energy, high energy and nuclear physics, and basic science programs at DOE.

Mr. Kripowicz began his government career in the early 1970's in program analysis and budgeting activities at the Atomic Energy and Nuclear Energy Commissions and the Energy Research and Development Administration.

In the private sector, Mr. Kripowicz managed research and development programs at Mechanical Technology Inc.; construction contracts for Consolidated Edison of New York; and financial planning and budgeting at NUMEC, a nuclear subsidiary of ARCO; and was a chemist for Dupont.

He also served as an officer in the United States Army.

Mr. Kripowicz received his Bachelor of Science in chemistry (cum laude) from Lafayette College in 1963, and his MBA from the University of Pittsburgh in 1970.

A native of Butler, Pennsylvania, Mr. Kripowicz currently resides in Silver Spring, Maryland.

January 1995

Printed with soy ink on recycled paper

Mr. REGULA. We're happy to welcome you. You can summarize your statement as you choose, and then we'll have a few questions.

OPENING REMARKS

Ms. ERVIN. Very good. Good morning.

Mr. REGULA. I might say at the outset that what I've urged the various agencies is to do a zero-based budget because there's no question we're going to have less money for 1996 than we've had for 1995. Therefore, we're going to have very difficult priority choices, and when I look at what's proposed in the President's budget here, 25 percent, 26, 31, 10, 11, 39 percent, 24—these are all percentage increases to your various programs. It's not going to happen, frankly. It's just not going to happen. So I think we want to do the best possible effort of using the dollars that we have wisely, and we're going to need your help to do that. So let me again urge you to be thinking in terms of a zero-base approach in your budgeting, and we'll probably have some additional conversations later, once we know what we have available in resources——

Ms. ERVIN. Okay.

Mr. REGULA [continuing]. From the Budget Committee.

So, with that, we'll look forward to hearing your statement and your comments.

Ms. ERVIN. Thank you. Good morning, Mr. Chairman.

Mr. REGULA. Good morning.

Ms. ERVIN. Before I begin, I'd also like to say that I have Denise Swink, who's the DAS for Industrial Technologies, with me today, and also Gail McKinley, who is representing the Office of Technical and Financial Assistance, with us, and one or two other staff members here.

I do appreciate your comments, and let me tell you from the very outset that I will personally, and members of my staff will, work with you and the committee members and the staff to help in this situation as much as possible, and to give you a sense of our priorities and the relative tradeoffs for the various items.

FY 1996 BUDGET REQUEST

I'll proceed with my statement. Thank you for the opportunity to discuss the Department of Energy's Fiscal Year 1996 budget request for the energy efficiency programs. The request of $890 million provides us with an opportunity to make investments that yield significant benefits for consumers and businesses alike. American families will save $10 billion each year in home utility bills by the year 2000. U.S. businesses will save at least $6.6 billion in their energy costs; in addition, several billion more by avoiding industrial wastes generated. Federal utility bills will decrease by at least $400 million with these programs.

The point I'd like to emphasize, Mr. Chairman, is that our appropriation is an investment that returns more to the American taxpayer, dollar per dollar, than they pay in taxes. Homeowners and businesses receive lower power and fuel bills; $225 billion, in fact, in energy cost savings from these kinds of improvements to date, according to the Congressional Research Service.

Our work also helps domestic energy firms, many of whom are small businesses, remain competitive in the huge, fast-growing world markets that we face today. To give you an illustration, the market for environmental technologies, which includes a large portion of energy efficiency technologies, is estimated to be about $425 billion a year. If we can help American firms gain just an additional one-fifth of 1 percent of that market, the increased revenue will more than equal our entire appropriation.

Now these aggregate numbers may sound a little abstract. I understand. Let me attempt to make them more meaningful by sketching the challenges that we face in several sectors that we work with and our responses in the 1996 budget.

In transportation, Americans are driving 43 percent more miles and efficiency improvements in new vehicles have leveled off. As a result, oil imports have returned to the record highs we saw in the 1970s and are projected to increase to 60 percent of total use by 2010 and 70 percent by 2020. These increases will create an import gap of 9 million barrels per day by the year 2010 and transfer another $200 billion of U.S. revenue per year to oil-exporting nations around the world.

In response to this, our budget requests about $260 million for programs in the Office of Transportation Technologies. The largest part of this, $161 million in Fiscal Year 1996, is for what we are calling the Partnership for a New Generation of Vehicles, which integrates and expands our work in electric and hybrid vehicles, fuel cells, engine research, and advanced transportation materials. In partnership with major U.S. auto manufacturers and their supplier chain, the program will produce a prototype in the year 2004 with triple the mileage of today's mid-market sedan at no additional cost to the consumer and with no sacrifice in safety or performance.

The second major emphasis in our Transportation Sector request is for a variety of activities that build a self-sustaining market for alternative transportation fuels. These activities include research and development, demonstration testing, Federal fleet purchases, information, education, and training. All of this is woven together by a growing voluntary network of 34 "Clean Cities" committed to over $300,000 in non-Federal vehicle purchases across the country.

Shifting to the industrial sector, our request of $170 million addresses industry's pressing need to reduce energy costs, increase flexibility and productivity, and reduce environmental compliance costs. Industries spend $100 billion a year on energy costs and another $53 billion complying with environmental regulations. Our technologies provide one of the few win/win solutions for reducing energy costs, preventing pollution, and increasing productivity and competitiveness.

Our 1996 request includes three major elements. First, the "Industries of the Future" process has raised our interaction with key energy-intensive industries to new heights. These industries, which, by the way, account for 40 percent of the manufacturing investment of this country and about 5 million jobs, are working with us as never before to make their industries better and cleaner.

Our second major thrust is an increase in the Advanced Turbine Program, which we hope this subcommittee will continue to strongly support. Finally, we're requesting extremely modest expansions in our partnership programs—namely, Motor Challenge, ClimateWise, and the program NICE^3—due to the tremendous response we have received to these voluntary programs. Motor Challenge has more than 250 small and large partners; ClimateWise already pilots a new loan program with the Small Business Administration, and NICE[3] is leveraging more than $5 of State and private investment in new, small businesses for every Federal dollar.

In the Building Sector, the energy costs in our buildings is the largest single element in our national energy bill, $200 billion a year. Our Fiscal Year 1996 request for the Office of Building Technologies and the Federal Energy Management Program, $152.5 million, is about a $37 million increase from Fiscal Year 1995. There are a variety of programs. This increase is intended to deliver about $10 billion per year in energy cost savings to the residential sector and a similar amount to commercial builders, building owners, and tenants—a massive return, I think, on a relatively small Federal investment.

Now in Fiscal Year 1996 the major new thrust in the Office of Building Technologies continues a balance between cutting-edge research and development and accelerated deployment. In the Building America Program, as well as in our laboratories, we're pushing ahead on new construction techniques—new windows, new forms of lighting, and other cost-shared research and development.

But of equal importance, we've made great strides this year in our residential, commercial, and Federal energy partnerships program. Let me give you just a couple of examples.

We have teamed up recently with the National Association of Home Builders. It will allow us to work much more intensively with them to insure them that they will, essentially, profit from building new energy-efficient homes. It's an historic partnership, I believe, with NAHB, and I'm very pleased with it.

We've also reached agreement with Habitat for Humanity, one of the Nation's largest homebuilders, to use Department of Energy information and technical assistance to make their homes more comfortable and affordable.

We're proposing to expand our pilot program with Housing and Urban Development assisted housing, so that more than 1 million federally-supported housing units can be retrofitted by private energy efficiency firms and utilities, reducing HUD's operating costs significantly, creating jobs, and greatly leveraging our extremely modest spending.

Finally, we've requested an 8 percent increase for the Federal Energy Management Program, FEMP, based on an expanded field presence and enhanced ability to leverage about $10 in private sector investment for every $1 of ours.

Our request for the Office of Technical and Financial Assistance, $321 million, is less than 1 percent above our Fiscal Year 1995 appropriations for this Office. The absence of an increase here does not reflect a reduced commitment in any way or a lower level of effort. Instead, our request completely demonstrates our commitment to finding better ways to leverage our resources and to work more efficiently.

Two principal innovations have allowed us to maintain level funding in this office for Fiscal Year 1996. First, we're in the process of developing significantly more streamlined financial assistance procedures for our State grant programs. When completed, we believe this innovation will allow us to reduce Federal and State administrative costs while giving States and their customers more flexibility in delivering their programs.

Similarly, the Weatherization Program has continued to modernize and improve its effectiveness at leveraging additional resources. With new computerized auditing techniques, streamlined program rules, the program is now using the most modern energy efficiency practices in the field to deliver services to low-income households across the Nation.

Finally, I'd like to say just a word about the Integrated Resources Planning Program. You may have heard that there's no longer a need for this program because the utility industry is becoming more competitive. Mr. Chairman, nothing could be further from the truth from our perspective and from many others. Changes in the utility industry are placing unrelenting burdens on State governments around the country. We are facing an explosion of requests for our assistance under this program. I don't think we can walk away from our duties to help States and many utilities with this extremely complex and important problem.

In closing, Mr. Chairman, let me assure you that all of us at the Department and those sitting around the table here today understand the need to control Federal spending, but over the years this Subcommittee has shown that it understands that Energy Efficiency programs are investments with excellent payoffs to this country. You've heard the figures. A dollar appropriation for the Federal Energy Management Program returns $4 in Federal taxpayers' savings; $3 million invested in new lights, just one small example in lighting, has saved consumers over $700 million to date.

But let me close with a very quick story that I think will illustrate why I think it's essential that this Subcommittee try to fund, as much as possible, the request. In the early 1970s, NASA invented a new breakthrough technology called proton exchange membrane, or PEM, fuel cells. While American firms and American government did nothing with this technology, a Canadian firm received more than a decade of continuous research and development funding from the government, 100 percent funding in this case, followed by governmental funding for multiple demonstrations of this new fuel cell on regular transit buses. As a result, today it is possible to buy from this Canadian company fuel cell buses that use U.S. technology that cannot be purchased from any American firm. The American fuel cell buses we've funded since 1987 at a far more modest level use a less efficient technology right now, but we're striving for more.

Mr. Chairman, members of the Subcommittee, it's our hope that we don't repeat that kind of story for the next generation of passenger vehicles, as well as the many breakthrough building and industrial technologies on drawing boards and in laboratories across the country. We can't afford to repeat past errors in which our country underinvested in this kind of future. If we are to create economic growth, increase jobs, keep our industries competitive, and preserve our environment—four things virtually all Americans favor—we must increase our commitment to energy efficiency. Thank you very much.

Mr. REGULA. Thank you.

MARKETPLACE RESPONSE TO RESEARCH

It struck me as you were making this powerful case for all these benefits, why doesn't the marketplace respond——

Ms. ERVIN. Well, there are a number of reasons.

Mr. REGULA [continuing]. Without Federal intervention?

Ms. ERVIN. In some cases the market is responding, and we're very pleased about that. But there are a number of obstacles, I think. One is simple information. Some of our programs are really targeted to sharing the success stories that we find in the private sector. It's truly amazing to me, for example, when you look at some of the returns to investments that some companies are experiencing, and have been developed 10 or 15 years ago, that they aren't replicated faster. We provide a vital service to them in sharing that kind of information, demonstrating——

Mr. REGULA. I can understand that, but a lot of your programs are direct financial support. Take the prototype of the motor vehicle. What if we were just simply to establish, as we have done in the past, that the auto industry has to meet a certain MPG by a certain date; then leave it to the industry to figure out how to do it?

Ms. ERVIN. In general, there are a couple of obstacles that businesses and industries tell us, and then I'll turn PNGV as a case study of that. Businesses are telling us increasingly that the competitive market that they are in is forcing shorter and shorter planning. In other words, they're focusing on investments that give them the quickest return possible in the short term. And in many cases of energy efficiency technologies, the return is over a longer period of time, granted sometimes two, three, four, five years, but many industries make investments looking for returns that are two years or less. So they don't have the incentive in this price market to make the longer-term investments, and they need the Federal Government to help them with that longer-term, higher-risk research.

On the other hand, we're also hearing from a lot of businesses that, especially in this competitive international market, the time that they have to get a product into the marketplace is going down dramatically. Whereas some industries have 5, 10, or 15 years to develop a product and get it into the market and do fairly well for a reasonable market share, I'm hearing that that is down to 6 months, 12 months, 18 months, 2 years. So they are finding increasing need for the Federal Government to help on that end. What we're trying to do in this program, and have for several years, is to balance the portfolio to address the pressures they face.

PARTNERSHIP FOR A NEW GENERATION OF VEHICLES

Now let me turn to PNGV as a case study, the example that you raised. Here is a particular case where you have all of those issues that I just talked about, but it's added to by the fact that gasoline in this country is relatively cheap. The real price of gasoline has gone down over the last 20 years. When we talk to the automobile manufacturers, we find that, based on consumer demand for a dramatically increased efficient vehicle, this may be 10th, 11th, 12th on their list of priorities. They aren't going to do it alone.

The public interest, on the other hand, is significant because the miles that we're traveling is increasing. The gasoline that we're consuming is increasing to record highs and record import levels. You find in many nonattainment areas in this country the largest single source of air pollution is the transportation sector. So for these public reasons, we find a very nice convergence of interests that would allow us to form this Partnership for a New Generation of Vehicles that will triple the fuel efficiency of the American automobile.

Mr. REGULA. What's the ratio of match on that program; that is Federal to private?

Ms. ERVIN. In 1993, when this partnership was launched, the agreement was 50/50 over the 10-year cost of the program. That just brings us to the building of the prototype. After the prototype, of course, the industry is going to spend far, far more actually producing the vehicles.

An example that Tom Gross gave me recently is that GM spent about $5 billion to bring Saturn into the market, and that is just an incremental improvement in a vehicle, not a breakthrough improvement.

Mr. REGULA. Well, are you working on a prototype right now?

Ms. ERVIN. We're developing the various——

Mr. YATES. Is this a fuel cell prototype——

Mr. REGULA. I think it's an energy-efficient motor vehicle.

Mr. YATES. In what way?

Ms. ERVIN. There are several portions to this, and I'll let Tom add some more detail. Here's the challenge that we face with the typical American automobile today: less than 20 percent of the energy embedded in the gasoline actually reaches the wheels. We lose a lot through the engine itself. We lose a lot through the drag of heavy materials. A lot of energy is wasted from acceleration; you brake and it's gone. So we've got to make dramatic improvements in all three of those areas to dramatically improve the efficiency of the automobile.

Now in terms of the priorities for the PNGV, there are about 15 critical technologies——

Mr. YATES. What does PNGV stand for?

Ms. ERVIN. Partnership for a New Generation of Vehicles. I'm sorry.

There are 15 critical technologies that the industry has identified that is important to achieve all of the goals of the PNGV. Four of those are in the Office of Transportation Technologies that Tom heads, and the top three priorities for the partnership are in our shop. So a good part of the success for PNGV rests in Tom's office.

Mr. REGULA. Walk through how this is going to happen. You're going to make a contract with the auto industry, including the imports? Are you going to set up a production facility somewhere where you do all this experimentation and produce this——

Ms. ERVIN. Why don't I let Tom——

Mr. REGULA [continuing]. Very efficient vehicle? I mean, exactly how will it be done?

Mr. GROSS. There are a number of parts, Mr. Chairman, to the Partnership Program, most of which were actually started within the Office of Transportation Technologies before the partnership was actually announced in September of 1993. And so some of the working relationships that have been established with the automotive industry and its suppliers were on the way to being consummated by then.

But let me go back and mention that, since the partnership was announced, there has been a very detailed look, at the programs in a number of Federal agencies and to understand what role those programs could play, if integrated together, moving toward the three primary goals of the partnership: one related to manufacturing technologies; one related to short-term improvements, including fuel economy; and the one in which we're most involved, which is the 80-mile-a-gallon car prototype by the year 2004.

Mr. REGULA. It's like that goal of going to the moon? It's been set out there as a goal?

Mr. GROSS. It has been compared to that very objective, as a matter of fact, in terms of its technical complexity.

The planning work that's been undertaken in the last year and a half has resulted in continuously more detailed plans. The most recent was published last week, the PNGV Technical Road Map, which I have a copy of here. That gets into the 14 areas of technology advancement that are going to be required in order to be successful at meeting all of these objectives.

It also, in effect, identifies the priorities because it identifies the areas in which, if we don't achieve some significant advances, we're not going to have any chance to get the 80-mile-a-gallon vehicle. Let me give you an example of the top three areas.

Lightweight materials is considered to be the most important priority. This is really an industry/government-developed effort, industry has had a major role in working through what these activities are going to have to be to achieve success. So lightweight materials is on the top of the list.

Next is energy conversion technologies, including the hybrid development program, the fuel cells program, and piston engine advances. There are a number of heat engine options which could be employed as part of a hybrid vehicle, each of which is going to have to have a significant increase compared to current energy conversion efficiency, if it's going to reach the efficiency that's going to be required for an 80-mile-a-gallon vehicle. So energy conversion is important.

Energy storage is the third priority on the list. A hybrid vehicle is, in combining an electrical storage system for producing electrical power and a heat engine, like a gas turbine; is going to have to have a way in which to capture and store energy with some sort of a peak power device. Batteries, ultra-capacitors, and flywheels are the ones that are most commonly being considered. But we need to have an energy storage device which can capture at least 50 percent of the brake energy loss that's being wasted.

So the program has a number of elements. Lightweight materials, which we have asked for significant increases in the past couple of years, and we're asking for another increase in Fiscal Year 1996, is a program priority. Primarily it comes together with the

U.S. Automotive Materials Partnership, USAMP, which is part of the U.S. Council on Automotive Research, which was formed by the Big Three a few years ago. So we will have, similar to the cooperative agreement that we've had with the U.S. Advanced Battery Consortium for the past few years with the Big Three, a partnership with USAMP in the development of lightweight materials, with the objective being to get at least 30 percent, preferably 40 percent less mass in a car, which is going to be needed for that big triple fuel economy increase.

We have already gotten a couple of contracts in hybrid development, one with Ford and one with General Motors. We have fuel cells. We've had an ongoing contract with General Motors for a couple of years. In 1994, we started two additional contracts, one with Ford and one with Pentastar.

What I'd like to point out is that in each of these cases—and I can go back to the U.S. Advanced Battery Consortium as an example—this is not money going to the Big Three. What we have is a partnership with the Big Three where the combination of their funds and ours are going to provide the funds for the research and development being undertaken by a number of other companies, the National Laboratories and some universities to develop the technology breakthroughs in materials, energy storage, and energy conversion. If we don't get those breakthroughs in those 3 areas, the other 11 areas by themselves aren't going to get the job done to get this fuel economy increase.

Mr. REGULA. So you're saying that the match coming from industry, along with the Federal money, goes to a third party contractor to develop the technology such as lighter materials or a new engine——

Mr. GROSS. That's correct. It will be on the basis of a competitive solicitation. The Partnership actually goes out with it and identifies in some detail the specifications that will be needed in terms of weight, durability, safety, and corrosion and——

Mr. REGULA. This information will not be proprietary? It will be available to the entire industry, including the offshores?

Mr. GROSS. Those portions of the work that are pre-competitive are usually available, as they are under the USABC, for some period of time only to the Partnership. We keep it to ourselves, to the U.S.-owned companies for up to five years.

ENERGY EFFICIENT WINDOWS

Mr. REGULA. Just a couple of questions. I see you have exhibits. I presume this is an example of an energy-efficient window.

Ms. ERVIN. That's right. This man knows everything about windows. [Laughter.]

Mr. KRIPOWICZ. Actually, there are various combinations you can use. The worst window is the single-pane glass. Almost all the windows that are made now have double panes.

Mr. REGULA. Right.

Mr. KRIPOWICZ. If you put a coating on these, that selectively keeps the heat in the house, you can get a 50 percent reduction in energy loss.

Mr. REGULA. Why wouldn't the marketplace do that?

Mr. KRIPOWICZ. They do now. We do not——

Mr. REGULA. So why do we have to do it?

Mr. KRIPOWICZ. Well, what we're doing now is working with the industry to go to what we call super-windows, which look at possibly triple-pane glass, new coatings that they haven't tried before——

Mr. REGULA. I think you can buy triple-pane now, even for a home, if you want to expend the money.

Mr. YATES. Who spends the money for it?

Mr. REGULA. Well, the homebuilder——

Mr. YATES. Yes, but homebuilders are not going to spend money for a double window if they can get a cheaper home with a single-pane window.

Mr. REGULA. Well, that's the option of the purchaser.

Mr. KRIPOWICZ. That's one of the problems.

Mr. YATES. How much does super-windows increase the cost of a home?

Mr. KRIPOWICZ. A super-window would be probably a maximum of 15 percent more expensive than a regular——

Mr. REGULA. The window or the house?

Mr. KRIPOWICZ. The window.

Mr. REGULA. The window? [Laughter.]

Mr. YATES. And, therefore, the house.

Mr. REGULA. Well, not necessarily.

Mr. KRIPOWICZ. No, no, the windows are——

Mr. REGULA. A portion of the total cost.

Mr. KRIPOWICZ. A typical window and the frame, not the installation and everything, would probably cost a couple hundred dollars.

Mr. REGULA. Extra?

Mr. KRIPOWICZ. No, in total.

Mr. REGULA. So you get $30 more——

Mr. KRIPOWICZ. Yes.

Mr. REGULA [continuing]. For the super-window?

Mr. KRIPOWICZ. And the question is—you're depending on the area of the country that you're in and your electricity bills——

Mr. REGULA. Wouldn't the builder tell the consumer, "You pay an extra $1,000 for this house, and you're going to save $5,000 over the life of the house in fuel bills?"

Mr. KRIPOWICZ. Absolutely. That is what we try to do——

Mr. REGULA. Why doesn't the marketplace take care of this?

Mr. KRIPOWICZ. Mr. Regula, they are doing that in the case of "low-emissivity" windows now. Every major window manufacturer manufactures these and advertises them, and they now have approximately 35 percent of the market. What we intend to do with the super-window technology, which looks at new coatings, new gases in between the panes rather than air. You have to look at inert gases like argon or krypton—these are things that haven't been proven in the market. We have facilities at Lawrence Berkeley Laboratory, for example, that measure the performance of the windows.

One of the things we've found is that, in addition to the window, you have to look at the frame. Once we made the windows more efficient, we found out that you were losing more energy from around the frame than you were saving by having a more efficient glass.

Mr. YATES. Exactly.

Mr. KRIPOWICZ. So they had to look at ways to fix the frames to make them more airtight and less conductive——

Mr. YATES. My co-op in Chicago just completed a contract for new windows throughout the place, and instead of the old wooden frames, they put steel frames in, and they're more drafty than the old frames were. [Laughter.]

We don't have double windows. We have the single windows, and during the Chicago winters we still have to go through the procedures of putting plastic up and all kinds of baffles to keep the drafts out.

Mr. KRIPOWICZ. It was probably cheaper——

Mr. YATES. Now you sympathize with us on that, don't you? [Laughter.]

Mr. KRIPOWICZ. Sir?

Mr. YATES. You sympathize with us?

Mr. KRIPOWICZ. I certainly do.

Ms. ERVIN. We do. We all do.

Mr. KRIPOWICZ. We will recommend that they not do that sort of thing. [Laughter.]

Mr. REGULA. Are you getting billed for this?

Mr. YATES. Yes, we are. We're getting billed $10,000 because there are lots of windows.

Mr. REGULA. Each homeowner?

Mr. YATES. This is an apartment.

Mr. REGULA. Yes, well, each unit in the co-op——

Mr. YATES. Yes, each unit gets billed. It's terrible. Not only that, but with steel frames you can't lift or lower them.

Mr. REGULA. But you're going to save on your fuel bill.

Mr. YATES. I doubt it.

Mr. SKEEN. Well, you can't sue them in a tort claim anymore.

Mr. YATES. No. [Laughter.]

It's terrible when you're one in many.

Mr. REGULA. Wasn't it a democracy making the decision? [Laughter.]

Mr. YATES. Well, I was here, not there. That's the problem. [Laughter.]

The promises were glowing.

Mr. REGULA. So what you're saying is that you do contracts with agencies to develop this information as to perhaps part of the mechanical portion——

Mr. KRIPOWICZ. And we have testing facilities——

Mr. REGULA [continuing]. And make it available to the industry?

Mr. KRIPOWICZ. Yes, sir.

INTEGRATED BUILDING AND CONSTRUCTION SOLUTIONS

Mr. REGULA. Is it IBACOS that is a consortia——

Ms. ERVIN. That's right.

Mr. REGULA [continuing]. That testified last week.

Mr. KRIPOWICZ. Yes, sir.

Mr. REGULA. They, I assume, help all the components of the industry in providing information, and that's the role you see for the DOE?

Mr. KRIPOWICZ. Well, we are supporting IBACOS and other consortia like that because the building industry is very fragmented. There are over 100,000 builders, and 125,000 designers and scores of manufacturers, and it's very difficult to get them together to decide to look at the building as a total system. That's what IBACOS and other consortia like them, do. They look at the building to try to figure out how to build the whole thing on a much more efficient basis. They will look at things like super-windows, lighting and more efficient heating and air conditioning products, as well as the ways you construct buildings in order to make them more energy-efficient, less wasteful of water, and built at approximately the same cost or less and in less time, and give you better comfort. That's the idea of consortia.

Mr. REGULA. Do you get any contribution from industry on these programs?

Mr. KRIPOWICZ. In the super-windows area, the windows industry has done very little research of its own. The research basically has been completed; what we will do is provide technical support to the window manufacturers. They do all of the manufacturing themselves. We'll do some testing ourselves, and then they'll take that product and run with it.

Mr. REGULA. They're big. They, Pella and Andersen, have resources, very substantial resources. It would seem to me they could contribute to the development of technologies to their advantage, and I see their ads in the various building magazines. They sell the idea that they're energy-efficient.

Mr. KRIPOWICZ. And they do provide cost-sharing. The exact percentage I can provide you for the record, but they also do all of the construction and installation of the windows for the testing that we do. And what we're talking about here is something in the neighborhood of $1.5 million for the whole industry that we'd be talking about providing in 1996.

[The information follows:]

COST SHARING IN WINDOWS & GLAZING PROGRAM

e first priority of industry for window research and development (R&D) is evelopment of the technical basis for the basic and comprehensive National enestration Rating Council (NFRC) rating systems. This research receives ajor in kind cost sharing by industry, universities, and foreign government esearch organizations (through the International Energy Agency and bilateral greements involving several staff years of research). NFRC members provide ontributions valued at two million dollars. Also of high priority to ndustry is the so-called "Superwindow Collaborative". Based on our investment made over the next four years and anticipated industry investment, the project can result in a doubling of the energy efficiency of all windows sold. During FY 1996, efforts will focus on project development and development of core tools and information products. Cost sharing in FY 1996 would approach 50/50, with 20 to 1 cost sharing expected beyond FY 1997. The Electrochromics Program assists consortia which have specific contractual cost sharing requirements (minimum of 25% for Phase 1 and 50% for Phase 2). Phase 2 (FY 1996/97) non-Federal contributions would provide over $5 million in direct R&D support, plus much more in the actual commercial deployment. The project is already providing benefits in the commercial deployment of nearer-term technologies for control of solar and optical properties. Material characterization technology is essential for both materials development and rating and is receiving non-Federal contributions far exceeding 50/50 cost sharing.

	FY 95 Approp	DOE Cost	Direct	Indirect	FY 96 Request	DOE Cost	Direct	Indirect
Windows/Glazing	5024		4270	1600	7606		5800	2600
a. Electrochromic Research	2484		1200	0	3923		2500	0
Electrochromic Consortia		1805	1200	0		2500	2500	0
b. CCAP-Super Window Tech	200		380	0	200		400	0
CIEE		80	380	0		100	400	0
c. Performance & Simulation Research	2340		2590	1600	1991		2400	1600
PG&E, Cardinal & Anderson, Dow		35	150	0				
ASHRAE		15	40	0				
NFRC			800	1200			800	1200
IEA/Canada			1200	400			1600	400
d. CCAP-Superwindow Collaborative	0		0	0	1492		0	1500

Mr. REGULA. And one more question. I have a lot of them for the record and you'll have more of them after I go around to the other members.

INCREASE IN STAFF

Mr. REGULA. At a time of government downsizing, how do you justify a 12 percent increase in your staff?

Ms. ERVIN. From Fiscal Year 1995 levels? Is that the——

Mr. REGULA. Right.

Ms. ERVIN. Yes. We have had an increase in the staff, but there has been some significant leveling off as well, and I'll have to provide more detail for the record for you.

I will say, however, that under the Energy Policy Act, we have had responsibility for working with and implementing about 240 different provisions, and that has created a considerable work burden on the office. So we have had to staff up for that. I'll provide more details for the record.

[The information follows:]

STAFFING INCREASE

The 12% increase in staffing from 487 in FY 1994 to an estimated 544 in FY 1995 reflects the expansion and growth in activities mandated by the Energy Policy Act (EPACT) as well as for Administration initiatives, an increase in the size and quality of our workforce to match our increased responsibilities. The new staff will be working on such programs as industrial competitiveness and pollution prevention, helping U.S. technologies compete for the vast, new international markets that are being developed for energy efficient and renewable energy systems, as well as for long-term efforts.

Mr. REGULA. Mr. Yates?

FUEL CELLS

Mr. YATES. I want to go back to the fuel cell-powered Canadian truck. Are they being sold on the market now?

Mr. GROSS. I think they're available for sale, but I don't think anybody can afford it.

Mr. YATES. How much do they cost compared to a gasoline-powered truck?

Mr. GROSS. I'll have to get the exact figure, but it's at least $50,000 or $60,000 more.

[The information follows:]

COST OF THE CANADIAN FUEL-CELL BUS

The reference must be to the hydrogen PEM fuel cell powered bus built by the Canadian company Ballard Power Systems. It is a prototype vehicle and is not being sold in market quantities—it is still in the demonstration stage.

A small fleet of five Ballard fuel cell buses (40-foot, hydrogen-fueled, 275-horsepower transit buses that carry 45-60 passengers) are being proposed for purchase by the City of Chicago for a cost of about $1.5 million each as demonstration units. The developmental cost for this prototype can not be compared to the cost to buy a current diesel bus. However, if a sufficient production quantity could be established, the fuel cell bus would only cost 20 to 50 percent more to produce than the current diesel bus. Because fuel cells have no moving parts, the maintenance costs are lower, making the fuel cell bus cost competitive on life-cycle basis.

Mr. YATES. Well, what are the savings? Is there a saving that would justify a purchaser buying the truck, a fuel saving, or is the fuel more expensive?

Mr. GROSS. No, it is more efficient, and there is a fuel saving on the operating costs. But since it's such a new technology, as are the test buses that we have, there is substantial work that needs to be done on——

Ms. ERVIN. It's still a prototype at this point; is that right?

Mr. GROSS [continuing]. Cost reduction of the fuel cell technology.

Mr. YATES. Well, is this the kind of prototype comparable to the electric car we see pull up here in front of our building or is the electric car more advanced than that?

Mr. GROSS. No, I think it's equal to that. It's very high cost and it still needs to be proven in operating practice over a long period of time.

ELECTRIC VEHICLES

Mr. YATES. Where are we with the electric car?

Mr. GROSS. Well——

Mr. YATES. Mr. Kripowicz has been trying to build one for 20 years. [Laughter.]

Mr. GROSS. Let me talk, in responding to that question, about something we feel is an indicator of the progress that is being made. As you know, we put a lot of the resources that you appropriated into the U.S. Advanced Battery Consortium, with the objective of reaching some battery developments with very specific midterm goals that have been identified, and——

Mr. YATES. Where are you with the batteries?

Mr. GROSS. Let me show you; we actually brought a sample of a battery here.

Mr. YATES. Really?

Mr. GROSS. Yes. It's been produced by Ovonic, a small company in Michigan, as a result of a contract——

Mr. YATES. That's an electric car battery?

Mr. GROSS. Well, that's not for a whole electric—maybe for a toy electric car. [Laughter.]

Mr. YATES. You'll have to be a weightlifter. [Laughter.]

Mr. GROSS. What we have in this battery though, is one that has twice the power and twice the energy——

Mr. YATES. Yes.

Mr. GROSS [continuing]. For the same volume of——

Mr. YATES. How many of those do you need to run an electric car? Do you have an electric car that's running on those batteries?

Mr. GROSS. Yes, we do, as a matter of fact. Solectria, a small company up in Massachusetts, in one of the electric vehicle races last summer, actually got hold of a nickel metal hydride battery from Ovonic and did over 200 miles between recharges, which is in that case almost three times what it could have gotten——

Mr. YATES. A range of 200 miles?

Mr. GROSS. At a range of 200 miles.

Mr. YATES. How many batteries were in the car?

Mr. GROSS. I'll double-check it, but I believe about 48 of those.

Mr. YATES. Forty-eight?

Mr. SKEEN. It's 1.2 volts. It's going to need a whole lot of help.

Mr. GROSS. Right. [Laughter.]

Mr. YATES. Then if that's true, why do you look so proudly at that?

Mr. GROSS. Well, we look proudly on it because, compared to the goals that have been identified and compared to the current technology, this represents some pretty significant breakthroughs. Current specific energy, watt hours per kilogram, which is an indicator of ability to climb hills, accelerate, and so forth, is 35—the current lead acid is 35 and this is 70 watt hours per kilogram. Specific power, watts per kilogram, is about 160, and the midterm goal was 150.

Mr. YATES. Question——

Mr. GROSS. This is an indication—I should have mentioned specific power is acceleration; energy is the ability to go the 200 miles.

U.S. ADVANCED BATTERY CONSORTIUM

Mr. YATES. Who developed this battery?

Mr. GROSS. This is developed by Ovonic Battery Company in Detroit, Michigan, under a subcontract to the U.S. Advanced Battery Consortium.

Mr. YATES. A subcontract to whom——

Mr. GROSS. Or a contract——

Mr. YATES [continuing]. Do you mean—the Big Three?

Mr. GROSS. This is—this is——

Mr. YATES. Do you have a contract with the Big Three?

Mr. GROSS. We have a cooperative agreement with the Big Three, and the Partnership awarded the contract.

Mr. YATES. Uh-huh. Why don't you go directly to Ovonic instead of going through the Big Three?

Mr. SKEEN. Try that in your watch [referring to a battery]. [Laughter.]

Mr. GROSS. Well, you may recall that we spent many years going directly to battery developers, and we spent even more than we have spent with the U.S. Advanced Battery Consortium and didn't come up with a result. One of the reasons is that the automotive manufacturers that would have to put these in their vehicles weren't part of the process of identifying specifically what in terms of technical specifications and cost requirements——

Mr. YATES. Well, the reason I ask the question is I wonder whether or not your contract with the Big Three is likely to pay off. Are your discoveries being made by other companies than the Big Three? I take it that's what happened in the case of Ovonic.

Mr. GROSS. Yes, but it's at the—in effect, as a result of very detailed development of a scope of work by the government and industry working together as to what the requirements were going to be, and then an evaluation by them together of the proposals that were submitted for developing a technology. There were a lot of proposers that did not get funded. Obviously, only the best were chosen, and among those that were chosen, this is the one that is coming out of the process that looks like it has the best potential at this point. Now we still have some serious challenges to overcome with respect to the cost of materials, the cost of this battery, and getting down to the goal of $150 per kilowatt. It's going to require us to actually make it, we think, in the marketplace in a vehicle.

Mr. YATES. Is that more promising than the use of fuel cells to power your electric batteries?

Mr. GROSS. I think you have to define "more promising" in the context of——

Mr. YATES. Being able to put——

Mr. GROSS [continuing]. In the context of the ability——

Mr. YATES. Your goals to have an electric car——

Mr. GROSS. In the context of——

Mr. YATES [continuing]. Powered by electricity, and fuel cells give you electricity, do they not?

Mr. GROSS. That's correct——

Mr. YATES. Okay.

Mr. GROSS [continuing]. In the context of the vehicle that will go 150 or 200 miles.

Mr. YATES. Yes.

Mr. GROSS [continuing]. And satisfy a number of commuter requirements, shopping requirements, these sorts of things. At this point in time a battery-powered electrical vehicle looks very attractive, and has a lower risk, for example, than a fuel cell.

FUEL CELLS

Mr. YATES. Well, is that true considering what conclusion I drew from your testimony, that at least in Canada the fuel cell looks like it's going to be able to power buses now—at a higher cost; that's true?

Mr. GROSS. That's correct, and electric vehicles are still at a higher cost right now, too.

Mr. YATES. Yes, yes. But if fuel cells will power that truck, why won't they power an electric car?

Mr. GROSS. A fuel cell, of course, is another area in which we're doing a lot of investigation, and we have multiple contracts because we think that the fuel cell vehicle is, at some point in time, the one that has almost zero emissions on a complete total fuel cycle basis, tremendous energy conversion efficiency that we need to get that big-miles-per-gallon vehicle, and multiple fuel capabilities. So we're doing a lot of investigations, but the materials and design breakthroughs that are needed make that a very high-risk endeavor.

Ms. ERVIN. Part of the challenge, as I understand, also, is the size of the fuel cell that we need for the automobile.

Mr. GROSS. Sure.

Ms. ERVIN. And correct me if I'm wrong with this, Tom, but for a larger bus, then size is not as much of a constraining——

Mr. YATES. I see.

Ms. ERVIN [continuing]. Factor as what you would need for the passenger——

Mr. YATES. I see. Okay. I'll take that.

Mr. REGULA. Will you yield?

Mr. YATES. Sure.

NATURAL GAS VEHICLES

Mr. REGULA. Why don't you concentrate on natural gas? You get very low emissions. The technology's already proven. It seems to me this is where you could accomplish the goals you're after without getting into these esoteric technologies.

Ms. Ervin. One of the beauties and the important things about this technology plan that Tom outlines that has just been developed by the industry is to lay out the various technology options that we have for meeting these goals. Now natural gas, I mean, if fuel cells prove viable for meeting this goal—and we'll have a necking down of the technology choices as we go along—natural gas could play a role with that, certainly, with the fuel cell.

What is the time frame for necking down, as they say, or narrowing down the technology choices? Is it about two years? In two years we'll have a better idea as to which one——

Mr. Gross. 1997, 1998.

Ms. Ervin [continuing]. In 1997 or 1998, we're going to have a much better idea as to what the most promising technology option is going to be.

Mr. Yates. But the chairman's right, isn't he? You've got the natural gas now, and at least it's pollutant-free, as I understand it, by comparison to the present?

Ms. Ervin. Well, natural gas is certainly an important part of our alternative fuels program that, along with our advanced natural gas vehicle demonstration that we just unveiled several months ago, has significant improvements in fuel economy and a great reduction in air emissions. So that's an important part of our alternative fuel program.

This is slightly different, of course, because we're talking about breakthrough technology, advanced generation, and tripling the fuel economy.

Mr. Yates. Mr. Chairman, I know I'm going over my time——

Mr. Regula. All right.

ZERO EMISSION VEHICLES

Mr. Yates [continuing]. But the question is: what are the Big Three doing to meet the California standards that they're going to have to meet so quickly? Are they going to do it by natural gas? Are they going to get your better engine and less pollutants through a different engine? What are they doing?

Mr. Gross. The California standard, of course, that gets the most attention is zero-emission vehicles.

Mr. Yates. Right.

Mr. Gross. The only vehicle that's certified by California now is an electric vehicle. Natural gas is not certified at that level. A dedicated natural gas vehicle can meet ultra-low emission vehicle standards, which is another part of their program, but the auto industry is——

Mr. Yates. Why wouldn't a natural gas vehicle meet the pollutant standards? Does natural gas still throw out pollutants?

Mr. Gross. No_x. Nitrogen oxides.

Mr. Yates. Oh, I see. California doesn't want that?

Ms. Ervin. It's good, but it's not low enough.

Mr. Gross. It's not as good.

Mr. Yates. I see. Thank you, Mr. Chairman.

Mr. Regula. Just before we go to Mr. Skeen, what's the advanced natural gas engine? You just mentioned that. Now what's got to be done—what's new in terms of the so-called advanced natural gas engine?

Mr. GROSS. Optimizing the ignition systems and fuel injection systems and sensors and electronics, and so forth, as well as the storage to all fit together specifically for a natural gas optimized——

Mr. REGULA. Is there such an engine commercially existent at the moment or are you trying to develop it?

Mr. GROSS. There are natural gas engines, some of which we have supported the development and certification of.

Mr. REGULA. Well, I know, but this advanced natural gas engine is it commercial?

Mr. GROSS. No large-scale production, though.

Ms. ERVIN. Not yet, yes.

Mr. REGULA. Mr. Skeen?

INTERNAL COMBUSTION ENGINE

Mr. SKEEN. Thank you, Mr. Chairman.

That's a very intriguing question. I think in my lifetime, going through engineering school, one of the big problems was the internal combustion engine efficiency. It was what, 16 percent, something of that order, in the late——

Mr. GROSS. About 12 to 20——

Mr. SKEEN [continuing]. Forties, early fifties? How far have we improved that, just the overall efficiency of the internal combustion engine?

Mr. GROSS. Well, the engine itself is perhaps 25 to 26——

Mr. SKEEN. Twenty-five to 26? So you're losing——

Mr. GROSS [continuing]. Currently used in your car.

Mr. SKEEN. You're losing more potential out of it than you're using in moving whatever you're moving with the engine still. That's a very intriguing question, except that we're so wedded to that type of engine, and I think that engine design goes on and on and on.

But the real problem—and I'm not here to lecture you; you folks understand this problem, but it's always intrigued me that, in comparing the way we do the research in this country, because we have—if you have the private sector involved in this thing, they have a profit patience period; that is, they're going to extend it on the improvements and the research, and so forth, if they can figure that within 30 days they get a profit turnaround. As averse to this, the Japanese will wait 20 years to develop a product, and one of them is fiber optics. It's our technology; they took it off the patent when the 20 years was up, and then they had it to market on diagnostics, and they developed it. So today we're buying our technology back from the Japanese on fiber optics diagnostics equipment, and it's really a strange thing.

That's what you folks are doing now, as I understand it, trying to fill that void and cooperate with providing some of the funding for the research to get us into this same gap.

Ms. ERVIN. That's right. Right now, the market does not provide the consumer demand or signal that would provide our automobile manufacturers the incentive to invest in this kind of long-term research. You're right in pointing to the Japanese and some of our competitors. The Japanese are spending about $500 million a year for some of the key technologies——

Mr. SKEEN. And a lot of that is——

Ms. ERVIN [continuing]. Right in here. The European Union has got a $15 billion program for a very similar partnership, $15 billion over 15 years, to develop these kinds of technologies.

Mr. SKEEN. The point I'd like to make, it's not private sector money that they're using. There's an awful lot of government support.

Ms. ERVIN. Combination. Yes.

Mr. SKEEN. It's a combination effort because they want a profit, too, even though they'll wait 20 years for it and we want it in 30 days, but it's an intriguing problem.

BUILDINGS CONSORTIA

You mentioned the windows, and that's an important innovation. We've tightened up the buildings and the heat transfer, shortened the heat transfer quotients in most buildings today, and so now we've got a radon gas problem. If you want to scare somebody, we tightened up the houses and we've made them more fuel inefficient, and now we've got radon gas to worry about. And so we're going to have to have another element or increment in this business of how you circulate that.

Ms. ERVIN. That's why the IBACOS project——

Mr. SKEEN. Put it in the car. [Laughter.]

Excuse me.

Ms. ERVIN. That's why the IBACOS type of model and the consortia that Bob was referring to is so important, because they're really taking a systems approach to the whole house, and air quality is one of the factors.

Mr. SKEEN. We come up with a lot of resolutions of a lot of problems that we've had for so long, but then they also spin off other problems that you've got to take care of. So you're winnowing your way through this whole field. This is a very complex situation and very costly, and I can understand it. But I think that we're going in the right direction as far as our government's involvement in things, if we don't bog it down with putting in so many—getting—you want to increase your personnel by what, 12 percent, or——

Ms. ERVIN. I'm providing some information for the record.

Mr. SKEEN. Fine.

Ms. ERVIN. I don't have that available——

Mr. SKEEN. Well, some anyway.

Ms. ERVIN. Yes.

Mr. SKEEN. Because one thing we tend to do with government agencies is we get the personnel up before we get the procedures and the rest going. You've got to have the personnel, and I understand that——

Ms. ERVIN. Absolutely.

Mr. SKEEN [continuing]. But it complicates the equation——

Ms. ERVIN. Yes.

Mr. SKEEN [continuing]. Because we're talking about—Congress talks about dollars; give me results. We talk about dollars in these committees over here; we're talking about personnel; you're talking about systems, the pensions, the support, and the rest of it, because you've got to have it——

Ms. ERVIN. Yes.

Mr. SKEEN [continuing]. The data, the equipment, and all the rest of it.

Ms. ERVIN. I'll tell you, one of the challenges that we've had with implementing the various provisions I referred to earlier, we have about 240 provisions. It has been an enormous workload for us.

Mr. SKEEN. Yes.

Ms. ERVIN. That has led to perhaps an unanticipated blessing because we could not have done this at all without a really radical change in the way that we work with partners. For example, we're working with States, with local governments, utilities, and energy service companies in a very aggressive manner because we can't do it without them.

Mr. SKEEN. The whole production cycle——

Ms. ERVIN. Yes, exactly. So while we've had a staffing increase, it's probably not nearly what we would have seen had we tried to run all the programs ourself. It would have been fatal.

Mr. SKEEN. I understand that, and I appreciate what you're doing. The question is—I'm very much attuned to what you've been trying to do and am very sympathetic because it has produced results. It's put us back in the competitive—and there's nobody in the world that can beat us on the technology, if we could just learn how to produce it and put it into use——

Ms. ERVIN. Exactly.

Mr. SKEEN [continuing]. Within a quick profit turnaround mode, because we have to have a profit. Other folks may not have to rely on it, but we do. It's part of our system.

FUEL CELLS

The fuel cell, we've been going on with that. Los Alamos has been involved in the fuel cells. There's an athletic bus in this town at Georgetown University——

Ms. ERVIN. Yes, I'm aware of that.

Mr. SKEEN [continuing]. That's running on fuel cells. Father Tim did a pretty good job on this.

Mr. GROSS. Father George.

Mr. SKEEN. Father George. Excuse me. [Laughter.]

These Catholic priests are pretty good.

Ms. ERVIN. I need to meet Father George.

Mr. SKEEN. You've got to meet Father George, and, I'll tell you what, there's one of the great characters. Anyway, he's got a bus that runs on fuel cells.

Ms. ERVIN. That's right.

Mr. SKEEN. And we've been promoting the money for that for I don't know how many years, but we're getting those folks to the football games on time. [Laughter.]

Mr. GROSS. I'm glad to hear that it's running and getting people where they need to be. [Laughter.]

Mr. SKEEN. I'm sure you are.

Mr. YATES. The Canadians used it as their model. [Laughter.]

Mr. SKEEN. Yes, the Canadians were competing with us.

But, anyway, I appreciate what you do and I understand the problems that you have to deal with. These things, kicking them back and forth in here—our basic understanding—one of the things we don't do in Congress very well is understand function. We're always interested in what the dollar signs are, but we're not really sure sometimes exactly what the function is. I'm not being critical of it, but—because our interest drops off as soon as you get off the Hill, and that's unfortunate. So that's good to have the kind of conversations that we have in these hearings. It's just too bad that every Member of Congress can't go through the same cycle with it.

Thank you, Mr. Chairman.

Mr. GROSS. I'd like to point out that we'll have two more buses this year like the one that's running at Georgetown, one at South Coast Air Quality Management District in the Los Angeles area and one probably in Chicago, and then we'll have some difficult decisions to make based on the results of the tests over the next year or so.

Mr. SKEEN. Thank you, Mr. Chairman.

SULFUR LAMP

Mr. REGULA. Before we go to Mr. Skaggs, CNN has made us somewhat aware of exhibits.

Ms. ERVIN. Yes.

Mr. REGULA. So maybe you'd want to——

Ms. ERVIN. Yes, I'd love to tell you about this.

Mr. REGULA [continuing]. Explain your exhibits.

Ms. ERVIN. Yes. This has captured a lot of——

Mr. YATES. What is that?

Ms. ERVIN. This is called a sulfur bulb and it has captured a lot of public and media attention: BBC, CNN, NBC, everyone. And it is really quite a marvelous technology breakthrough and one that I think this Subcommittee should be really proud of for supporting.

This is called the third most important lighting technology breakthrough since Thomas Edison created the light bulb. We worked with a small high-tech firm in Maryland and a couple of other firms to produce this prototype.

These are the mechanics of it. This bulb contains a tiny amount of sulfur and a little bit of argon gas. It has no electrodes, which is the common reason for failure in light bulbs. It contains no mercury, which is an environmental problem for disposing. Instead, the argon gas is energized, or activated, by microwave energy, the same kind we would use in our kitchen microwave. It bombards this, activates the gas, and produces a light. Not only that, but it produces a light that's four times brighter and contains a spectrum that is much more similar to sunlight. In fact, it is very, very close to sunlight.

Mr. YATES. How do you get it out of a microwave oven? [Laughter.]

Ms. ERVIN. Well, that's the problem. No, no, I'm just joking. [Laughter.]

So what we're doing now is we're demonstrating and testing this at the Forrestal Building as one of several sites. One of these sulfur bulbs is replacing 120 of these high-intensity lamps. And in the Forrestal Building, we have two of them to replace 240 of these, one at each end of a light tube. So part of the miracle, if you will, of this technology breakthrough is not just the bulb, but putting it together with a tube that is very reflective and is able to carry the light a long distance—a 240-foot tube and two of these bulbs.

And, by the way, we're——

Mr. YATES. Is it already installed?

Ms. ERVIN. Pardon?

Mr. YATES. Is that already installed?

Ms. ERVIN. It is installed, and I'd like to invite you over to see it.

Mr. YATES. I'd love to see it.

Ms. ERVIN. Yes, that would be marvelous.

We've had it in place for about four months now. In addition to the intense light—and it's brighter there—we're going to be saving about $100,000 a year on our lighting bill from this. Now the Air and Space Museum has three of these in place. They're 70-foot-long tubes.

Mr. REGULA. In other words, these are made commercially?

Ms. ERVIN. No, they're going to be. The company, Fusion Lighting, in Maryland, is making plans to commercialize them over the next—

Mr. REGULA. So the one you have it just a prototype?

Ms. ERVIN. This is a prototype, yes.

The Air and Space Museum, by the way, is also interested in this because they produce much lower ultraviolet rays, which, of course, extends the life of the exhibits there.

The other advantage that I had not thought of at all—and these are for the larger-scale applications—is at the Air and Space Museum, for example, it's dangerous and a real hassle to go up and replace those bulbs in the very high ceilings. Well, there's nothing inherent in these bulbs that will fail, and so they'll be saving a lot of maintenance costs in not changing the bulbs.

Mr. YATES. How long will those last?

Ms. ERVIN. Well, we don't know. It's indefinite. Probably the limiting factor is the microwave unit itself. That's something that we're looking into, but it's not the bulb per se.

The next stage of development for the sulfur bulb is to develop the low-intensity version for indoor use. We think that will be developed and commercialized in the longer term, four, five, six years, something like that.

Mr. YATES. Well, now, Mr. Chairman, may I ask a question at this point?

Mr. REGULA. Yes.

Mr. YATES. Somebody's going to make money on that. In the old days, Thomas Edison either financed himself or else he had an outsider finance him. The guy who put up the money, generally made money, was Thomas Edison. Do we have any contracts with all of these wonderful gadgets that are going to go onto the market? Do we have any kind of contracts so that we, the United States taxpayers, can get some money back later on royalties or as part of the profits?

Ms. ERVIN. That's an issue that's been raised a number of times this session.

Mr. YATES. Oh, we've raised it over the last 20 years.

Ms. ERVIN. Yes.

Mr. YATES. And always been thwarted. [Laughter.]

Ms. ERVIN. Thwarted?

Mr. YATES. Thwarted. It's very hard to pronounce, but it means frustrated. [Laughter.]

Ms. ERVIN. No, I understand that. I understand the word. [Laughter.]

Mr. REGULA. What he means is we haven't gotten any money back. [Laughter.]

Ms. ERVIN. Yes, that's right. Well, we do practice forms of recoupment in some of our programs, and, actually, we're doing an inventory of the various mechanisms that we're using in the Department. We do have some processes in place with certain kinds of manufacturers and certain royalty streams, but I'll tell you this: I think it's a promising area to explore. Generally, what we've tended to do is to offset a royalties fee for increased cost-sharing in the project development itself. But we are open to, and are willing to, explore some alternative arrangements to look at these kinds of things, although we may swear or share in the thwarting.

Mr. YATES. What are those other gadgets that they have?

Ms. ERVIN. Pardon?

Mr. YATES. That's one gadget. What are the other gadgets you have besides windows and—what is that?

Mr. KRIPOWICZ. This is an electronic ballast for fluorescent lighting. It looks basically the same as the old ballast, except that it has electronics in it rather than magnetic devices to run it, and you need these for fluorescent lamps. These are about 30 percent more efficient than the old ballasts that were used and are now maybe about 20-some percent of the market.

DOE, in the late seventies and early eighties, provided about $3 million to develop this technology. We worked with small businesses to do this, but it took a long time to get it into the market. They actually didn't start to sell very well until the early 1990s, and now we're about 23 percent of the market, I think, approximately $400 million worth of sales a year.

Mr. REGULA. Mr. Skaggs?

Mr. SKAGGS. Thanks, Mr. Chairman.

Good morning.

Ms. ERVIN. Good morning.

Mr. SKAGGS. It is disconcerting to see Bob on that side of the table. [Laughter.]

Mr. REGULA. Don't spare him. [Laughter.]

Mr. SKAGGS. Oh, no. We're going to continue in your take-no-prisoners tradition. [Laughter.]

FEDERAL ROLE IN RESEARCH

Sorry I was late and missed your opening comments.

Just in looking over this sort of summary sheet, the bullet that says, "Our balanced portfolio of programs will help save consumers and businesses more than $18 billion in energy costs and create roughly a quarter of a million jobs by the turn of the century," is that a figure based upon the year 2000 versus the year 1994? Is that a delta from the present forward?

Ms. ERVIN. That's right, yes, those are annual savings, but beginning in the year 2000.

Mr. SKAGGS. And the word "help" in that bullet is—raises a question. Is this something that will not happen, that would not happen, but for the programs that you are asking us to fund?

Ms. ERVIN. We think that's right. One of the important criteria that we use in evaluating and selecting our programs and their priorities is the question: would this happen without us? Is there an appropriate Federal Government role? Would we achieve these savings without us? And we think we've tailored our programs with that in mind.

Mr. SKAGGS. So we should read that bullet as making the statement that private investment, without the leveraging effect of your programs, would not accomplish this end?

Ms. ERVIN. I think that's right. Now in some cases it might occur, but over a much longer period of time.

Mr. SKAGGS. And time is money.

Ms. ERVIN. Time is money.

Mr. SKAGGS. The "portfolio" term there, is that the portfolio programs that fall within the jurisdiction of this subcommittee exclusively or are we including some Energy and Water Subcommittee items as well?

Ms. ERVIN. Well, in general, the notion of portfolio applies to both energy and water and to energy efficiency. What we're referring to here is that it's a portfolio of programs that extend from longer-term R&D to deployment of those technologies.

Mr. SKAGGS. That's fine. I just wanted to make sure we read this accurately.

Ms. ERVIN. Right.

Mr. SKAGGS. So photovoltaic work is in here as well, presumably?

Ms. ERVIN. These—no, this particular fact sheet does refer to the portfolio in energy efficiency. I see your question. That's what it's referring to.

Mr. SKAGGS. Okay. So you could have a similar fact sheet to take to Mr. Myers?

Ms. ERVIN. Exactly. That's right.

Mr. SKAGGS. That would be complementary, not duplicative?

Ms. ERVIN. Exactly.

ADVANCED TECHNOLOGY PROGRAM (ATP)

Mr. SKAGGS. Okay. One of the things I've been trying to explore in these hearings this year is the coordination issue, whether in basic science or applied science. What are your mechanisms to coordinate what you do with, say, what goes on under the ATP program at NIST?

Ms. ERVIN. I can give you one immediate example since we talked about PNGV, the Partnership for a New Generation of Vehicles, quite a bit. Here's a case where you have seven Federal agencies working together with the private sector in pursuit of this common goal and set of goals. The ATP program in the 1996 budget has a competitive proposal that would address one or two of the high-technology priority areas. I can't remember which one——

Mr. GROSS. Particularly in lightweight materials.

Ms. ERVIN. Lightweight materials.

Mr. GROSS. For example——

Mr. SKAGGS. I was going to ask whether you divide this on a materials versus other pieces of technology basis, and——

Ms. ERVIN. Essentially, what we've done with the PNGV—and I think sometimes we don't receive enough credit for this, frankly—is to basically say, as Tom is referring, we had a lot of ongoing programs in various pieces of research and development that in many cases have been not focused on common objectives, but they're there. Now the beauty of the Partnership for a New Generation of Vehicles is that it's coordinated and tying a lot of these things together. So we're looking at individual agencies and saying, what is their niche, contribution? Where is their core expertise? Where can they make the greatest contribution to this PNGV? And then we coordinate them in that way.

In this case, the ATP solicitation proposal was viewed as the best way to address that portion of the advanced lightweight materials.

Mr. SKAGGS. Just looking at materials science, because I'm aware that NIST is active there and your industrial technologies program has devoted some of its efforts there as well, beyond the New Generation of Vehicles, which I gather is as fully coordinated as these things can be, are there other clearance points and vettings so that you know that you're not duplicating what NIST is doing, and vice versa?

Ms. ERVIN. Two responses to that: one is a broader response in terms of the role of the Office of Science and Technology Policy is playing under the leadership of Jack Gibbons. That whole enterprise is designed to coordinate Federal R&D programs across government in a way that probably hasn't been done before, except in isolated areas.

So, for example, I serve on a couple of the committees under OSTP. One of them is commerce and industrial development. So that provides a forum for us to exchange information on what we're doing in various areas of work, and that is leading to some productive exchanges and methods of coordination.

INVENTIONS AND INNOVATION PROGRAM

On a much smaller scale, one thing that I might refer to is our inventions and innovation program that is specifically in this Subcommittee's jurisdiction. There's been an incredibly successful program that's targeted to the entrepreneur, to the small inventor, to help them develop business plans or to give them the tools that they need for really bringing an invention, testing it and developing it and bringing it to market.

Now that program is very specifically coordinated with NIST. We get the applications in and we send them to NIST, and they do the technical review to see whether or not they're feasible. As one person at NIST evaluates whether or not the proposals obey the laws of physics, and then the ones that meet that test we look at and evaluate for their feasibility, and work with those inventors.

COORDINATION ON ATP AND TECHNOLOGY REINVESTMENT PROGRAM (TRP)

Mr. SKAGGS. One of the areas of concern in the ramping up that's been going on, both—which I basically favor—in your area and the ATP and manufacturing technology at NIST and TRP and DOE is the growth rates, how do we make sure that when there's so much new going on that this coordination really does work? I think of how complicated it is getting conflict-of-interest clearances in a large, multi-location law firm, for instance, and we're sort of talking about the obverse of that, but making sure that somebody isn't doing the same thing that a deal that you're about to cut would be doing, and that they're—and maybe it hasn't gotten to the point where it can even be brought to the table at a coordinating effort like OSTP. So I'm interested, if you can perhaps provide for the record a real effort to in a kind of catechism way—what are you all forced to go through to make sure that, you know, you're not, in all good faith, starting down the same path that somebody else is already tentatively pursuing?

[The information follows:]

PROCESS REVIEW PROCEDURE BETWEEN DEPARTMENT OF ENERGY AND OTHER FEDERAL AGENCIES ON RESEARCH EFFORTS

The following describes the process review procedures which prevent duplication of research efforts conducted by the Office of Energy Efficiency and Renewable Energy and other Federal agencies.

Transportation Sector

The Office of Transportation Technologies (OTT) coordinates with the Steering and Technical Committees of the *Partnership for A New Generation of Vehicles (PNGV)* all DOE R&D activities related to the three goals of this government/automotive industry partnership. The Department of Commerce (DOC) has the lead role for interagency coordination involving seven Federal agencies, namely, the Department of Commerce and its National Institute of Standards and Technology (NIST), Department of Energy, Department of Defense (DOD), Department of Transportation (DOT), National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), and the Environmental Protection Agency (EPA).

Activities of the OTT Electric and Hybrid Vehicles Program are externally coordinated through the *Interagency Coordination Task Force on Electric and Hybrid Vehicle Technologies.* DOE currently is the lead coordinating agency for this task force includes members from DOE, DOD, DOC, DOT, EPA, NASA, NSF, NIST, Department of the Interior (DOI), and the Office of Science and Technology Policy (OSTP). Members review and discuss agency programs, progress, and level of coordination. A Charter has been established which includes the mission and objectives of the task force. Meetings are conducted quarterly and a role in supporting the PNGV technical group is expected to evolve. Once each year, each agency presents its planned budget for the upcoming fiscal year. In addition, the program managers frequently meet informally with their counterparts in DOD and DOT to discuss program activities and attend each others program reviews.

The Office of Transportation Materials coordinates transportation materials-related activities with other agencies through the interagency committees of OSTP such as the National Science and Technology Council (NSTC, formerly the Federal Coordinating Committee on Science, Engineering, and Technology, FCCSET) and the Materials Technology (MatTec) Subcommittee (formerly Committee on Materials, COMAT) of the Committee on Civilian Industrial Technology (CCIT). Ceramic Technology R&D is coordinated through the Interagency Committee on Structural Ceramics. A Task Group on Lightweight Materials for Ground Transportation has also been established to coordinate interagency efforts in lightweight transportation materials. Coordination through the Advanced Materials and Processing Program (AMPP) of NSTC has resulted in initiation of the programs on Lightweight Transportation Materials and Advanced Ceramics Manufacturing in FY 1992. Coordination of these programs continue.

The activities of the Office of Alternative Fuels are also coordinated with other Federal agencies through the Interagency Committee on Alternative Fuels and Low Emission Vehicles (INTERFUEL). This committee was established to promote coordination and dissemination of information among Federal Agencies involved in implementing the Clean Air Act (CAA), Alternative Motor Fuels Act (AMFA), Executive Order 12759, Energy Policy Act (EPAct), and other related legislation. Information shared include data on alternative fuel and alternative fuel vehicle usage, technical advancements, testing, and evaluation. Problems and issues common to the agencies are discussed and analyzed.

Buildings Sector

In the Office of Buildings Technologies (OBT), program plans are developed in cooperation with industry and others through an informal process of research needs assessments, workshops, and general outreach.

The extent of interagency coordination varies depending on the needs of individual programs. For example, indoor air quality activities have considerable interagency cooperation through the interagency Committee on Indoor Air Quality. OBT's collaboration with NIST is an example of a very intensive collaboration with a single agency on a number of research topics, including refrigeration research, building controls, and equipment efficiency test methods.

For the past year, the Construction and Buildings Subcommittee of NSTC has been examining the long-term potential opportunities for advancement in the buildings sector. The Subcommittee involves over a dozen Federal agencies including all those with a role in research and technology related to buildings. The Subcommittee drafted a report, "Rationale and Preliminary Plan for Federal Research for Construction and Buildings," in September 1994. The Subcommittee, along with support of the Civil Engineering Research Foundation and industry representatives, have developed a set of overall long-term goals to guide Federally sponsored R&D.

EPA, while not performing buildings research, supports a number of programs to encourage the private sector and the consumer to make energy-efficient choices in the construction and retrofit of buildings and in the purchase of equipment and appliances. Meetings are held at both the program and senior levels to ensure that DOE's and EPA's efforts complement each other. In several cases, this has led to EPA providing funding for DOE projects, DOE providing funding for EPA projects, or joint support to third parties for complementary activities.

In addition, DOE has an independent peer review process through the Office of Energy Research/Program Analysis. This office carries out the responsibility assigned by the DOE Organization Act to identify undesirable gaps and duplication in non-defense research programs. It conducts independent assessments of DOE R&D projects on a program by program basis. Building sector programs have been reviewed by the Program Analysis Office. Experts from industry, academia, other agencies, and national laboratories were a part of the review panels.

Preliminary discussions have begun regarding a follow-on to the most recent review.

Industry Sector

Within the Office of Industrial Technologies (OIT), interagency communication and coordination has been a prominent focus to ensure the Federal dollars are well-spent and to prevent program over-lap. The process for reviewing activities with each agency varies according to program need.

Major coordination occurs with agencies such as the EPA, Department of Agriculture (USDA), NIST, and DOD.

The OIT sponsors work in several materials programs such as the Continuous Fiber Ceramic Composites (CFCC) program, the Advanced Industrial Materials program, and the Advanced Turbine Systems (ATS) program. These programs are well coordinated within DOE and with other agencies. For example, the interagency structural ceramics committee meets annually to describe program activities and thrusts for the coming year. This year the meeting is scheduled for May 9-10 at the National Academy of Sciences. Program managers from DOE, the Air Force, Navy, Advanced Research Project Agency (ARPA), NIST, Naval Research Laboratory (NRL), and NSF will present information. In addition, key players from agencies serve on advisory panels to other agencies. For example one OIT program manager serves on the Fiber Consortium Committee with ARPA and DOD headquarters personnel and seven industry members to coordinate fiber development for composites. Turbine activity is coordinated with the military turbine activities through attendance at annual reviews and through joint planning activities. For example, this year DOE, NIST, and NASA co-sponsored a conference with their contractors on thermal barrier coatings. This brought together players from industry with various governmental programs and provided cross-fertilization of ideas and program activities.

DOE, the NAVY, NASA, and DOD headquarters share goals and information on turbine development. Information on these areas are shared through participation in steering committees, review meetings, and co-sponsored events.

Several programs share low-emission goals with EPA organizations. OIT shares program activity with EPA on the NICE[3] program, waste minimization projects, alternative feedstocks and turbines. EPA has contributed personnel to these programs to provide guidance and has assisted in project selection.

USDA co-sponsors several projects and provides guidance in planning processes within the alternative feedstocks and the pulp & paper programs.

NIST, through their Advanced Technology Program (ATP) program, covers commercial applications for DOE R&D programs in materials and refineries (separations). Interaction occurs in review meetings and through informal communications.

Utility Sector

No other agencies fund the type of technical assistance that is provided by the Integrated Resource Planning (IRP) program. DOE is working with USDA's Rural Utility Service, to provide technical assistance to small, public power utilities. In addition, DOE regularly communicates with EPA to ensure that any areas of mutual interest between the IRP program and EPA's voluntary energy efficiency programs do not result in duplication.

Ms. ERVIN. Before I add to that, Denise Swink, who is our DAS for Industries, says that she has something to contribute.

Mr. SKAGGS. She has the answer?

Ms. ERVIN. Yes, she has the answer.

Denise?

Ms. SWINK. On the TRP program, we participate as reviewers in that process for technical, as well as economic, performance. I'm not sure if you're aware that what happens is that in the TRP process there's actually two times that we've been able to interface. The first time is that we have participated as reviewers on the proposals that came in, and then, once the selections were made, agencies were brought over and, basically, we bid on which of those projects were in our field of expertise. So, consequently, we influenced the complementarity of the program rather than the duplicity of the program.

And, for example——

Mr. SKAGGS. Don't say "duplicity." [Laughter.]

Ms. SWINK. Right. And in the advanced technology program, we're operating in the same way. We basically made white paper proposals to the ATP program for what would be their focus priority areas, and we proposed them to be companions to what we were already doing in our program. I'd like to point out that one of the things that we do in industry is more a matter of putting the technology or the material in place onsite. The Technology Reinvestment Program and the Advanced Technology Program have a tendency to be more of the manufacturing of the material itself, not the actual incorporation into the system, and that's basically the balance that we've had, and we've been very successful. One of our programs, the continuous fiber ceramic composites program, which is a materials program, basically, has proposed to both TRP and ATP complementary programs to the one that we fund, and we were part of that process.

Mr. SKAGGS. I appreciate the information. I don't know—I don't think we can realistically expect a zero error rate in this sense among all of the different activities that are going on in the government, but I don't need to tell you how devastating it would be if "60 Minutes" or somebody finds three different government tentacles basically doing the same thing in an overlapping fashion. So I just want to give you one Member's sense of how important it is to really do this as well as you can possibly do it, giving what you're facing in the budget climate that we're in and the efforts to get more resources going in this direction.

Am I out of time or do I have——

Mr. REGULA. Oh, take a couple of more. We've all been kind of careless about time this morning.

DIVESTITURE OF POWER MARKETING ADMINISTRATIONS

Mr. SKAGGS. Do you have any view on the proposal for the divestiture of the Power Administrations and whether we will realize any efficiency or conservation by doing that, or would you like to take a pass on that?

Ms. ERVIN. I'll take a pass.

Mr. SKAGGS. All right. [Laughter.]

I thought that's what——

Ms. ERVIN. Thank you for that option.

Mr. SKAGGS. If you happen to think of anything later, the record will remain open. [Laughter.]

FY 1995 RESCISSIONS

Mr. SKAGGS. I'd like to get a sense of the consequences of the rescissions that we passed out of this House and are awaiting action across the way. Something like, if my arithmetic is right, something like 11 percent of your transportation-related budget would be rescinded for this Fiscal Year, 7 percent in building technologies. Those are the bigger hits. What's that going to mean?

Ms. ERVIN. Well, we're concerned, of course, about a number of the rescissions. The percent that you referred to in transportation focused primarily on the alternative fuels money, and I believe the rescission there was $20 million from the House; that's right, and the Senate rescinded a smaller portion of that money.

But that's important to us for a number of reasons. We really do believe that, in addressing the oil import situation that we have, that there is a critical need to develop an alternative fuel system and infrastructure in this country. And, with that in mind, we think the Federal Government not only plays a leadership role, they have a responsibility to put their money where their mouths are and to actually use and demand those vehicles.

But, also, we have entered into partnerships with cities across this country under the Clean Cities Program, and part of the deal with them, if you will, is that we would provide them information, technical assistance, support, recognition of their own local efforts to develop their alternative fuels infrastructure; in addition to those things, we would give priority attention in our Federal fleet acquisitions to locate them in their areas and to match the fuel that they have chosen in that area, whether that be natural gas or ethanol or whatever. So when we lose a large chunk of that money, it considerably reduces our ability to meet those commitments that we've made with cities.

Mr. SKAGGS. Are you going to be able to keep the commitments you've made?

FY 1995 RESCISSIONS-WEATHERIZATION ASSISTANCE PROGRAM

Ms. ERVIN. Well, no, we would not be able to do that, then, with this rescission.

A number of other areas concern us. The weatherization reduction was of some considerable concern. I think members of this subcommittee probably know better than many others the delicate and difficult nature of the $20 million increase that we added last year for the weatherization program in order to implement the new rule. That rule was based, as you may well know, on providing what was perceived to be an inequity in the allocation formula for the southern States, and also to update the formula to account for changes in population in the way that we count renters versus owners, and so forth.

It took about $20 million to insure that there was a hold-harmless provision in the formula, and that no States would really lose money in weatherization in order to accommodate that rule. So when you had a rescission of that portion of the weatherization money, it undoes the delicate balance.

Now we have a proposed rule out there, and we are planning on doing an interim rule by the end of April, I believe it is. We don't know yet what the response will be to that change in the balance. It may be okay; it may not. I don't know.

In addition to that, there's just the very tangible loss of about 7,000 homes that will not be weatherized with the rescissions proposed by the House. There are a number of others that I could go through.

Mr. SKAGGS. Well, perhaps we can borrow the Georgetown bus to take some of those 7,000 to a visitors' center in Oregon and give them a sense of——

[Laughter.]

Mr. GROSS. That would be a good test.

Mr. SKAGGS. Thank you, Mr. Chairman.

TRANSPORTATION INFRASTRUCTURE

Mr. REGULA. You'd have a little trouble fueling it along the way.

Mr. SKAGGS. That's right.

Mr. REGULA. It seems to me that you're off on too many tangents. If the fuel problem is going to be critical in terms of imports and we want to offset it with other sources, we need to get focused because you have natural gas; you have fuel cells; you have electric, and others, and we don't have the infrastructure for any of them and we're not going to have infrastructure. In reality, when would it become usable?

Ms. ERVIN. We have two approaches in the transportation sector, essentially, to address that issue, not only the oil imports, but also the air pollution that's associated with it. One is demand side and one is supply side. The supply side is the alternative fuels where natural gas and other kinds of fuels play an important role, while the demand side is really greatly improving the efficiency of the automobile through the breakthrough technologies. Now we think it's important to work on both the demand and the supply side.

Within the demand side, specifically within the programs that are coordinated through the PNGV, there will be a narrowing-down of technologies. Within that 1997 to 1998 time frame that Tom talked about, industry is going to basically say these are the lead technologies that are going to make it, and then we will focus on those. We're at that delicate stage right now where there are several competing viable technologies, but they will narrow in the next couple of years.

Mr. REGULA. When I see the growth of imports and the impact on the balance of payments, along with increased consumption, it would appear to me we need to get focused pretty quickly here and start building infrastructure, creating infrastructure, to service one of these alternative fuel techniques rather than to dissipate our energies in so many different ways.

Ms. ERVIN. The approach that we have used on the supply side, focusing on alternative fuels—you're right, the infrastructure issue's really difficult. It's been the proverbial chicken-and-egg problem——

Mr. REGULA. Right.

Ms. ERVIN [continuing]. Of encouraging manufacturers to build alternative fuel vehicles and supply them, while encouraging demand for them when you don't have the infrastructure developed.

Now the logic of the Clean Cities Program that Secretary O'Leary launched last year is to basically take us as the Federal Government out of the position of picking a fuel per se and saying, "Cities, you decide. You have the best information on your supply, on your interests, and your needs, and the manufacturers. You tell us which fuel you want in the area." Now in many cases it is natural gas.

CONTINUOUS FIBER CERAMIC COMPOSITES PROGRAM

Mr. REGULA. What's happened on ceramics? I can remember in this committee when we talked a lot about ceramics.

Mr. YATES. And the competition is the Japanese.

Mr. REGULA. Yes.

Ms. ERVIN. Absolutely.

Mr. REGULA. Exactly. And I don't find a whole lot in your budget justification on ceramics.

Ms. ERVIN. Well, Denise, you're at the table. Do you want to talk about ceramics? We talk a lot about ceramics. It's very important to us.

Ms. SWINK. We have ceramics work going on in the Continuous Fiber Ceramic Composites Program. In addition, in our advanced materials, we have ceramic membranes that are being developed. The key with ceramics is being able to economically produce the product for the performance that you want. It's a materials processing issue right now.

Mr. REGULA. So we're still in the development stage?

Ms. SWINK. Yes, although we're starting to get some breakthroughs in actual use of, for example, CFCCs. There is, for example, a radiant burner, a company bought the actual nose to the burner from one of our CFCC teams and is using that now in industry in a boiler.

We're very close to having valves that are going to be commercially purchased for diesel engines. Not surprisingly, the applications are starting to trickle out. And, in addition to that, the materials teams have gone to refineries, like the Exxon refinery, and several pulp-and-paper mills, and glass processing units, and they're finding all kinds of opportunities for——

Mr. REGULA. But you propose a reduction in the work on ceramic composites whereas you propose substantial increases in many other areas.

Ms. SWINK. That's true. It basically that we had to do with us being able to balance our portfolio. We understand that we're not meeting the program plan that was sent to Congress on the CFCC program, but we have proof that progress is being made substantially at the reduced rate.

Mr. YATES. Mr. Chairman?

Mr. REGULA. Yes, Mr. Yates?

DOWNSIZING AT DEPARTMENT OF ENERGY

Mr. YATES. There are rumors that the Department of Energy totally is going to be downsized. Have those rumors reached you yet? [Laughter.]

Mr. REGULA. Yes, I think they might have.

Ms. ERVIN. Downsized or——

Mr. YATES. Outsized.

Ms. ERVIN. Outsized. Yes, those rumors have reached me.

Mr. YATES. What would happen to all of your programs were that to occur?

Ms. ERVIN. Well, I think the Secretary has put it very well in that she's basically saying, "What's the objective here? Are we trying to save money?" If we are, eliminating the Department of Energy is not the way to save money." We've gone through that exercise in the past.

Mr. YATES. Does the Secretary favor continuing the Department of Energy?

Ms. ERVIN. Absolutely. There are vital portions of this Department whose work will continue regardless of where you put these——

Mr. YATES. Is that the work before this committee or before Congressman Bevill's committee?

Ms. ERVIN. Both. I mean——

Mr. YATES. Well, are we still developing nuclear warheads and weapons material?

Ms. ERVIN. There is certainly a lot of important work that is being done in the nuclear area of the Department, as well as environmental waste cleanup, defense-related issues in terms of nonproliferation, in addition to the basic core of the National Laboratory system, and of course, the programs that we have before you and this Subcommittee and the Energy and Water Subcommittee.

Aside from the other critical elements of the Department, the Secretary has spoken very strongly about the need for a strong energy focus, that there needs to be a Cabinet-level emphasis on energy in this country, for a number of reasons including the oil import situation that you were describing earlier. Not only that, but I think very few Americans understand that about a third of our gross national product in this country is related directly and indirectly to energy, and that is far too significant to be left to miscellaneous programs scattered across Federal Government. It needs to be housed in one strong agency and it needs to be integrated into a strong energy policy.

Mr. YATES. Have these representations been made to President Clinton and Vice President Gore?

Ms. ERVIN. Oh, they've——

Mr. YATES. I won't talk about Mr. Kasich and the Budget Committee, but do they agree with Secretary O'Leary?

Ms. ERVIN. Absolutely. You may have been following the newspapers around the Christmas time frame; we certainly were reading them every day for a while, when the Administration was looking at significant cuts in the Department, and so forth.

Mr. YATES. Yes.

Ms. ERVIN. The analysis was done. The homework was done. The Administration and the President very clearly came out saying, "We want the Department of Energy. We want to keep these vital functions consolidated in this agency."

Mr. YATES. Okay.

PARTNERSHIP FOR A NEW GENERATION OF VEHICLES

Mr. REGULA. Back to the PNGV, you mentioned Europeans are spending $15 billion. Well, of course, the United States auto industry is a major player in Europe. Now are they participating over there?

Ms. ERVIN. Yes. Now I understand that is a 50/50 cost-shared—that is government and the private sector.

Mr. GROSS. The Eurocar.

Ms. ERVIN. The Eurocar project.

Mr. GROSS. The question is whether U.S. companies are participating in that.

Ms. ERVIN. Whether U.S. companies——

Mr. GROSS. Yes.

Ms. ERVIN. Oh, no, I'm sorry.

Mr. GROSS. Not——

Ms. ERVIN. No, I'm sorry.

Mr. GROSS. Not in that particular activity.

Mr. REGULA. Well, but the U.S. companies are major players in the European auto market. Would they not be part of this or is the Eurocar just for Mercedes and Audi, and so on?

Mr. GROSS. Yes, it is. Just as ours is associated with the U.S.-owned companies, there is a similar situation in Europe.

Mr. REGULA. So, in theory, they'll produce a competitive car for the European genesis whereas we'll produce an American car that may compete with the European car in the European market, and vice versa?

Mr. GROSS. And both sides will want to export it as much as they can to every place else in the world.

Mr. YATES. From Europe.

Mr. REGULA. Or both places.

Mr. GROSS. Europe will want to export it here. We'll want to export it there.

Mr. REGULA. Does the Eurocar have a challenge of any MPGs like we've apparently established for ours? What's the objective of the Eurocar?

Mr. GROSS. To my knowledge, it does not have a specific——

Mr. REGULA. I mean, what's the objective of their research versus what we're doing? Is it the same?

Mr. GROSS. They are also involved in developing a lot of the same technologies that we are with their teams, including improved internal combustion engine technology. They're probably a little bit more focused on that in Europe and Japan in their alliances than we are, but they are also involved in hybrid vehicle development and, to some extent, in fuel cells.

Mr. REGULA. Where's Japan in all of this? They'll probably pick it up after everybody else gets it developed. [Laughter.]

Mr. GROSS. Well, Japan does have a pretty solid program as well, about $400 to $500 million, a joint program with industry and the government.

Mr. REGULA. In Japan?

Mr. GROSS. In Japan.

Mr. YATES. With all their companies?

Mr. GROSS. I don't know if it includes all of them, but as MITI has worked with most of their large automobile companies over the years, they still are—and there's a JARI, J–A–R–I, Japanese Automotive Research Institute, that we understand has a staff of about 500, which is a public type of a corporation that has staff of both industry and government people working on automotive technology development together.

PNGV FUNDING RATIOS

Mr. REGULA. Now the PNGV is funded in about seven or more different agencies; correct?

Ms. ERVIN. Yes.

Mr. REGULA. What happens if the funding ratios change? Maybe in another committee, in another agency the funding's dropped. Doesn't that unglue the program, because I assume you're all working on a common track?

Ms. ERVIN. Well, that's right. And that would be a real complication. We've invested a lot of effort working with industry on this and putting together a coordinated Federal budget. Now if there are changes to the budget, then we have to go back and sit down with industry and figure out what it means.

Mr. REGULA. What's the total funding? I think you have $161 million?

Ms. ERVIN. About $176 million.

Mr. REGULA. In your budget?

Ms. ERVIN. Yes. In the total——

Mr. GROSS. That includes the Office of Industrial Technologies.

Ms. ERVIN. Exactly. And then the Department of Energy is what, 205——

Mr. REGULA. Defense has a piece.

Mr. GROSS. No, the Department of Energy is a bit more than that. I've got it.

Mr. REGULA. What's your best guess as to the total?

Ms. ERVIN. DOE is nearly $250 million and so the Department of Energy is about two-thirds of the entire Federal Government share.

Mr. REGULA. That is the total Federal involvement in PNGV?

Ms. ERVIN. Yes.

Mr. GROSS. In the Fiscal Year 1996 budget request, it's $385 million.

Ms. ERVIN. So a little less than two-thirds.

Mr. REGULA. That's the Energy portion?

Mr. GROSS. No, that's——

Ms. ERVIN. Total Federal Government is $386 million; the DOE share is nearly $250 million.

INTEGRATED BUILDING AND CONSTRUCTION SOLUTIONS

Mr. REGULA. Bob, you mentioned about IBACOS.

Mr. KRIPOWICZ. Yes, sir.

Mr. REGULA. You're proposing three additional consortia. Why do we need more than one?

Mr. KRIPOWICZ. It's a function of the nature of the building industry. Again, there are 100,000 different builders, and there are 125,000 different designers. You need to do something on a broad base in order to get the technologies into the marketplace. The three additional consortia will cover a lot more builders, and manufacturers, each of whom, then, will take the technologies that they design into the——

Mr. REGULA. You don't think there will be duplication?

Mr. KRIPOWICZ. The idea, from our point of view, is to have them concentrate on different areas. They won't ignore each other's areas, but the idea is to concentrate on different areas within the various consortia. And, also, they have different builders that will be going out and building. The largest builder in the country, which is aligned with IBACOS now, is only 10,000 homes a year. So you have to have a whole lot of builders in order to have this stuff infiltrate the system. IBACOS is now working with about a half a dozen or so builders, and the other consortia will work with several others. Some of them will look more at recyclable technologies; some of them will look more at electrical technologies, and——

Mr. REGULA. So in financing these, you will make sure that it's not a duplication?

Mr. KRIPOWICZ. Yes, sir.

Mr. REGULA. Mr. Skeen.

PROPRIETARY RIGHTS

Mr. SKEEN. Just one last question that I have an interest in, and that's we had the big question about technology transfer some years ago, and have we smoothed that all out, proprietary rights and all the legal odds and ends that we had with the Government and the private sector companies in cooperation on the technology development, easing the transfer? We had a lot of problems with that early on. So it's no problem now?

Mr. KRIPOWICZ. It's less of a problem, Mr. Skeen. One of the areas that a lot of work has gone into are the CRADAs that have been developed between industry and the National Laboratories, for example, which used to take months and months to——

Mr. SKEEN. That's correct.

Mr. KRIPOWICZ [continuing]. Get into place in order for the industries to be able to go forward with implementing the technology. That's down to a very short period of time now compared to what it used to be, and the question of proprietary rights appears to be fairly well settled.

Mr. SKEEN. So we've got far better definitions than what we had some 10, 15 years ago?

Mr. KRIPOWICZ. Yes, sir. It's much quicker, too, to—

Mr. SKEEN. Well, that was the idea, to get it speeded up because it was taking an interminable amount of time to get all these problems resolved.

Thank you very much. Thank you, Mr. Chairman.

Mr. REGULA. Mr. Skaggs.

Mr. SKAGGS. Thanks, Mr. Chairman.

WEATHERIZATION

Just a couple of other questions. I've been thinking—and forgive my sarcastic remark about weatherization alternatives—and the question is: are there—is there any recoupment of outlays for weatherization when a home is sold or transferred, or is that just a straight grant?

Ms. ERVIN. Put in that context, yes, I'd call it a grant. You're touching on one of the challenges that we face in the buildings industry, and some of our programs are designed specifically to find better ways of identifying the energy investment that has been made in a house. Right now, we have labels for appliances; we have energy-use labels on vehicles; but we don't have any labels for houses. Consumers generally don't know what they're getting in terms of energy efficiency in a house.

One of the things that this Subcommittee has supported over the last couple of years is the development of a national energy rating system, and we are finalizing that just within the next month or two. That is going to be invaluable actually for helping consumers identify energy-efficient houses and get a handle on what they might save. It's going to be important for homebuilders to market energy-efficient houses in a way that they haven't been able to, and it's also critical from the lending industry's point of view because now they would have a reliable, quantitative tool that they could use to reflect in their loan instruments and their mortgage instruments.

The shorter answer, then, to your question—and I haven't quite linked the two together in my mind before—is that right now we make retrofits in houses, whether it be low income or the private sector, for any kind of house, and there isn't really a good market way to identify the benefit associated with that. We're working on it.

Mr. SKAGGS. Well, that is of interest certainly, but what I'm thinking of is sort of weatherization endowment, if you will, in which on the sale of properties that have been brought up to a better R rating with public funds, that there is some recoupment of that public investment that is then turned over into funds available to help some of the rest of the housing stock, patterned on at least what I think most counties do in property tax forgiveness or suspension programs. They aren't forgiveness; they are suspension, in which the property tax for elderly or disabled low-income homeowners are merely put in suspension, and at the time the property is turned over, the Government recoups that property tax, but it's——

Ms. ERVIN. Yes.

Mr. SKAGGS. I don't know. I'm sure this can't be a new idea, but I just wonder why we didn't structure weatherization in a way that would help us help more people, and——

Ms. ERVIN. I'd like to explore this and get back to you on this issue because I'm not familiar with it, and we may have some case studies actually. But I'd like to do a little homework on this one.

[The information follows:]

WEATHERIZATION

The average expenditure (investment) per low-income household weatherized ($1,750) establishes the benefit to cost ratio as 1.62 representing the value of the energy saved and the economic benefits of the program. The programs' relatively low cost, very targeted approach to increasing the energy efficiency of homes does not constitute capital improvements or significant retrofit of the housing stock. The Weatherization program serves the "poorest of the poor". Low-income households are characterized by: 90 percent have incomes of less than $15,000 per year; 65 percent have incomes less than $8,000 per year; 13 percent have incomes of less than $2,000 per year; 12 percent of their annual income is spent on energy (national average is 3.2 percent); and 49 percent of the households have a person with disabilities or an elderly resident. Title III of the Energy Conservation and Production Act (Act 42 U.S.C. 6861 *et seq.* and is codified in 10 CFR 440) expressly requires DOE to reduce the heating and cooling costs of low-income Americans, who simply cannot afford these high energy bills by improving the energy-efficiency of their homes. Therefore, the Department does not intend to explore recovering the modest investment in energy efficiency measures from the low-income occupants.

DOE encourages States and local agencies to leverage dollars from other Federal programs, State revenues, utilities, housing authorities, and property owners who have the resources to contribute. DOE also requires States to have rental procedures which ensure all benefits accrue to the low-income occupants, i.e., rents cannot be increased nor tenants evicted for sale of property due to weatherization. States have initiated, through aggressive leveraging activities with utilities, programs which use specific types of direct and/or indirect rebates as well as financial participation by landlords of large multi-family buildings. The State of New York, for example, has set-aside $1,220,000 of their 1994 Weatherization grant to conduct direct leveraging activities. Through the third quarter of the 1994 program year, the return on the DOE investment of $1,220,000 has exceeded $1,400,000 and in the final quarter the non-Federal resources are expected to exceed a total of $3,000,000. The primary leveraging partners are the State utilities as well as several projects where the landlord will participate financially. The Weatherization program, through the Oak Ridge National Laboratory conducted a national evaluation which included a study entitled "Utility Investments in Low-Income Energy-Efficiency Programs" which encouraged DOE to coordinate with related public- and private-sector programs. Also, a study entitled "Scope of the Weatherization Assistance Program: The Weatherized Population and The Resource Base" concludes that while the scope of weatherization programs considerably exceed the activities of the DOE program, the DOE program directs the type and form of weatherization expenditures. During the last several years, States and local agencies have leveraged between $200–250 million which is added to the DOE funding of $180–200 million for a total program in excess of $400 million, generally doubling the number of low-income households served.

Mr. SKAGGS. Even if it's only, you know, a partial payback, I——

RETROFIT OF LOW-INCOME HOUSES

Ms. ERVIN. The one other thing that I might mention—and, again, it's beyond the weatherization, but it's dealing with the retrofit of low-income houses—is I don't know if you were here when we talked about the partnership that we have just signed with HUD, and that is—and we're very pleased about this because over a number of years we've been talking about the great potential in working together, given that they spend about $8 billion a year on their energy and utility costs? Couldn't there be some way of working together? So we've been talking about this for years. We funded a number, and helped support a number of pilot projects in States, and now we have come to the point where we have an agreement to work together. We are essentially going to provide $5 million in this 1996 budget to provide training and technical assistance to local public housing authorities, so that they will reduce energy use in their buildings by about 30 percent. That's going to affect a million of the homes in the HUD system and will significantly reduce, then, the costs that HUD undertakes to support those housing programs.

Mr. SKAGGS. Well, that reminds me of a commercially-available technology that I've spoken with you and your staff about a year or so ago just having to do with devices that regulate power consumption by refrigerators and washing machines, and I'm interested whether you've worked that into your HUD negotiation at all. Perhaps we can talk about that——

Ms. ERVIN. Are you referring to the power something——

Mr. SKAGGS. It's the green form.

Ms. ERVIN. Yes, the green—yes, I need to follow up on that.

Mr. SKAGGS. Great.

TRANSPORTATION TECHNOLOGIES SPINOFFS

Beyond just the next generation vehicle's inherent use of the technologies that you expect to have to be developed to make that work, what are the sort of spillover applications of those technologies outside the vehicle application itself? I assume we're getting—we're going to be pushing the envelope in areas that will be applicable not just to alternative vehicles or to the New Generation Vehicle, but will be more broadly useful to us as well. I wonder whether—if you have them at hand, great. If you want to elaborate on that in the record——

Mr. GROSS. Well, I can make a brief statement and then perhaps we can elaborate, but there are a number of the technologies, with transportation and energy storage being good example. If we can make some breakthroughs here—it's a power electronics building block that we're working on with a number of agencies that would be tremendous, if we're successful, in reducing the volume and the weight again of the electronics and the systems that are going to be needed to manage the hybrid vehicle and to control it.

If successful, there are a lot of applications in defense vehicles, human-carried power packs, and all sorts of things, that will be lots of spinoffs. Usually, they've come from defense to the civilian sector, and now defense is looking at some of the things we're doing for spinoffs in the other direction. So we're working closely with them on it.

Mr. SKAGGS. And if you could not exhaustively catalog, but perhaps some other areas as well——

Mr. GROSS. Yes.

Mr. SKAGGS [continuing]. That we ought to be aware of, that we're getting in collateral benefits instead of collateral damage——

[The information follows:]

POTENTIAL SPILL-OVER TECHNOLOGIES RESULTING FROM THE PARTNERSHIP FOR A NEW GENERATION OF VEHICLES

There is the potential for a great number of spin-off applications of the technologies being developed under the Partnership for a New Generation of Vehicles (PNGV). Since automotive application has some of the most stringent requirements, technologies developed for an automobile will meet the requirements for many other applications, including other modes of transportation, space, defense, and non-transportation applications. Fuel cells developed under the PNGV, for example, can satisfy such diverse applications as power for buildings, home heating and air conditioning systems, and hot water heaters, as well as lighting of remote areas. The development of breakthrough electronics with weight, cost, and size reduction for hybrid vehicles is another example. These same advanced electronics can be used for both defense and civilian applications where power regulation and variable motor speed is required. Spin-off is already occurring where the new ceramic materials being developed for turbine engines under the PNGV are being used in aircraft applications and, as additional advances are made, spin-off applications will widen in possibilities.

The development of new, more efficient engines, such as the automotive gas turbine, having multi-fuel capability and offering low emissions will likely have applications in other transportation modes, as well as defense applications. Still another example relates to the ultracapacitor. If developments are successful as peak-power devices for hybrid vehicle propulsion, ultracapacitors will have many applications in commercial markets to power amplification devices. The development effort of another power peaking device, the high power battery, will have spin-off synergism with battery development for electric cars and applications to portable electronic and communication devices.

Development of lightweight materials involving aluminum, fiber reinforced composites, and high-strength steels is one of the high priority efforts for PNGV development because of the need to reduce vehicle weight. If successful in meeting the automobile requirements for weight, cost, forming, production, etc., these same material developments can benefit other areas such as defense and aerospace applications.

Mr. SKAGGS. Thanks, Mr. Chairman.

HOUSING AND URBAN DEVELOPMENT PARTNERSHIP

Mr. REGULA. Speaking of the HUD program, the HUD partnership, why shouldn't this be in the HUD bill if it's so beneficial to their programs?

Ms. ERVIN. Well, essentially, it comes down to the fact that we house the expertise that's needed to——

Mr. REGULA. Well, you could pass it over to them.

Ms. ERVIN. This is a five-year program. It has a definite end. Once we are done training and providing technical assistance to the local authorities, we would get out. It takes an enormous amount of time to really develop the knowledge, the familiarity, and the instruments for energy-savings performance contracts, for example.

Mr. REGULA. Why couldn't HUD contract with you for this service on an intergovernmental basis, because it seems to me that this belongs in their budget? It benefits their program, and if they feel that it's worthwhile, certainly, they'd be happy to do it if it's in our budget, but will they spend the money if it's in their budget?

Mr. KRIPOWICZ. They're doing two things, Mr. Regula. One, they will be providing funds for the retrofits themselves through the public housing authorities. So they will be providing——

Mr. REGULA. Which are recommended by your team?

Mr. KRIPOWICZ. Yes. Well, the funds go to the public housing authorities by some mechanism of which I'm not familiar.

Mr. REGULA. No, but I mean the technique for the retrofit is developed by DOE——

Mr. KRIPOWICZ. That's correct.

Mr. REGULA [continuing]. People?

Mr. KRIPOWICZ. Yes, sir. But most of the funding for the projects themselves would be put up by HUD. So if we put up $5 million, HUD will put up a substantial portion more than that. In addition, they have set up an arrangement with a group to provide technical assistance service, like the National Appropriate Technology Assistance Service [NATAS], that we used to have in the Department of Energy to provide energy assistance to people on their own. So they are putting up some money of their own to do that. But the largest portion of the funds to do the retrofits, will come from HUD and private financiers in the localities.

Mr. REGULA. What do you spend on the HUD program, DOE dollars?

Ms. ERVIN. Five million.

Mr. KRIPOWICZ. Five million dollars is what is requested in the budget.

Mr. REGULA. Total?

Mr. KRIPOWICZ. We have had small amounts in previous years over the past five years totaling maybe $250,000 a year, and we've had pilot projects of exactly the same kind that would be put into effect nationwide in cooperation with HUD. We had one, in particular, that I visited in Chelsea, Massachusetts; then another one in Kansas City that I recall specifics on.

COOL COMMUNITIES PROGRAM

Mr. REGULA. What's the Cool Communities Program?

Ms. ERVIN. I sure wish we could change that name. [Laughter.]

Mr. REGULA. At least you don't spell it with a "K." [Laughter.]

Ms. ERVIN. You're right; we have that.

Cool Communities is a greatly misunderstood program, and I'll tell you personally I think it's one of the best programs you can think of with one of the biggest bangs for the bucks. It's very simple in concept. Essentially, in areas where you have high air conditioning loads, in hot areas, simply by lightening the color of buildings, outside building materials and roofs, you increase the albedo, which means the reflection of the sun, and you can dramatically reduce the amount of energy that is consumed in a house. Cool Communities really is designed, then, to use smarter, lighter, often better energy-efficient materials at a very low cost to reduce energy bills. And that's why, for example, the Los Angeles area, is specifically looking at Cool Communities' building products to help in their nonattainment plan.

Mr. REGULA. Do you publish some type of standards that the mayor of a city could get and then try to implement a program through their own initiatives?

Ms. ERVIN. I'll need to follow up on exactly where we are with that, but I do know that Lawrence Berkeley Laboratory and some of my staff have been working with the building industry—I believe it's the roofing manufacturing industry—to develop a common rating system for the materials used. And that kind of standardization and information, then, would be needed to expand the program in a number of communities.

Mr. REGULA. So your budget's only $2-plus million.

Ms. ERVIN. Two point two million.

Mr. REGULA. The most you can do is develop some guidelines, I would assume?

Ms. ERVIN. Oh, that's right, yes.

Mr. REGULA. Encouraging communities to plant more trees.

Ms. ERVIN. We do not plant trees.

Mr. REGULA. No, no, I know you don't.

Ms. ERVIN. All right. I just wanted you to know. [Laughter]

Mr. REGULA. But you would in your criteria suggest that a city that has a lot of trees is going to gain efficiency in cooling; correct?

Ms. ERVIN. True, and I don't mean to disparage the tree-planting contribution in other parts of the sector for this because that is a really common-sense way to reduce heating load as well. Plant a tree; it shades the house. Many of our older neighborhoods have that, and it reduces your air conditioning load. It makes sense. It's just not our bailiwick.

ALTERNATIVE FUEL VEHICLES

Mr. REGULA. You had an item in the budget, $20 million for alternatively-fueled vehicles for Federal agencies. We rescinded the 20 million. As I understand it, the Senate put $15 million back in. But the real question is, why would not these Federal agencies fund these vehicles themselves? Why does DOE have to take care of other agencies with its budget? It seems to me we could have an Executive Order from the President ordering these agencies to use a percentage of alternatively-fueled vehicles?

Ms. ERVIN. That's a lively topic of discussion right now among the Federal agencies. I think it was especially reasonable in the early years of implementing EPACT and the Executive Order that the lead program in the Federal Government responsible for alternative fuels would provide a leadership role in doing that. As time goes on, we are talking to Federal agencies and OMB about the feasibility and desirability of other Federal agencies picking up their share of the incremental costs. We just had our first interagency task force meeting, oh, a month or so ago——

Mr. GROSS. The 22nd.

Ms. ERVIN [continuing]. And that was one of the topics of discussion. And we have a group that's looking at exactly that issue.

Mr. REGULA. And you've asked for an increase to provide technical assistance to the Federal agencies on alternatively-fueled vehicles and education and information, and even regulations, and that's fine. I think that would be the proper role, but why would we need, through the DOE budget, to fund the purchase of the vehicles themselves?

Ms. ERVIN. I understand your question.

Mr. REGULA. So you maybe agree with me?

Ms. ERVIN. We're certainly exploring this issue in the interagency task force.

WEATHERIZATION ASSISTANCE PROGRAM

Mr. REGULA. Why is weatherization assistance a Federal responsibility?

Ms. ERVIN. The weatherization program——

Mr. REGULA. It's back to the marketplace issue.

Ms. ERVIN. Yes. The problem that we have with low-income homes, in particular, is that you have a greatly disproportionate amount of their disposable income that's going for energy. I think the average income for the families that we serve with this program is about $7,500, and a big chunk of that is for energy. I'm proud of this program because it is probably the only—I may be wrong, but it's probably the only low-income assistance program that pays for itself. In fact, the Oak Ridge analysis of the program identified that the cost-benefit ratio here is a little over 1.5 to 1. So here's a program that pays for itself and greatly reduces the income burden for these families.

The program also is becoming more efficient as time goes by, so that that cost-benefit ratio is even improving. Some of the weatherization teams that you find in this country really are using state-of-the-art technology and are probably doing a more sophisticated job than some of the utilities providing DSM.

Mr. REGULA. Of the $229 million that you've requested, how much of this is used, actually used, to weatherize homes as opposed to industrial properties or commercial properties?

Ms. MCKINLEY. Two hundred and twenty-six million.

Ms. ERVIN. So 3 million——

Ms. MCKINLEY. I'm sorry. Fifteen percent is used for administrative costs by the States, and then——

Ms. ERVIN. And it's usually the Community Action Agencies.

Ms. MCKINLEY. Then the rest is used directly to pay the work crews and for the materials.

Mr. REGULA. Of the $226 million, which number is it?

Ms. MCKINLEY. Two twenty-six less 15 percent is the number.

Mr. REGULA. Of the Federal?

Ms. MCKINLEY. I have a calculator here.

Mr. REGULA. All right. Now let's start over. You say there's $226 million in the weatherization program?

Ms. MCKINLEY. Yes, sir.

Mr. REGULA. Fifteen percent is given to the State for——

Ms. MCKINLEY. For administration.

Mr. REGULA [continuing]. Administration? What portion is spent by the Federal Government on administration?

Ms. MCKINLEY. That's the $3 million off the top. We started with 229——

Mr. REGULA. Oh, I see.

Ms. MCKINLEY. Three million off the top for Federal technical assistance and other administrative and program——

Mr. REGULA. Does that cover all of your administrative costs of the program, the $3 million?

Ms. MCKINLEY. It does not cover salaries for Federal workers.

Mr. REGULA. Yes. Well, now how much is that?

Ms. MCKINLEY. I don't——

Mr. REGULA. I'm trying to figure out how much ever gets out there insulating the house.

Ms. MCKINLEY. Yes, I can tell you that, sir. It's the $226 million less the 15 percent the States use for their administration—excuse me, I malfunctioned. [Laughter.]

A hundred and ninety-two million.

Mr. REGULA. Actually gets on the ground?

Ms. MCKINLEY. That's right.

Mr. REGULA. What portion of that is homes versus commercial buildings, or is this all homes?

Ms. MCKINLEY. All homes.

Ms. ERVIN. All homes.

Ms. MCKINLEY. Some multi-family, but it's all residences.

Mr. REGULA. Do you do any commercial buildings, like a hospital?

Ms. McKINLEY. No. No, sir.

Mr. REGULA. You have another budget item for nonresidential programs?

INSTITUTIONAL CONSERVATION PROGRAM

Ms. ERVIN. It's the Institutional Conservation Program, ICP.

Mr. REGULA. Yes. How much is that one?

Ms. ERVIN. The request is $26.8 million in the 1996 budget. And that's passed through to States for the retrofit exclusively of schools and hospitals.

Mr. REGULA. Why wouldn't that be a responsibility of the local community and State? Why would it be the responsibility of the Federal Government to weatherize a school building?

Ms. McKINLEY. Because the Congress, in its wisdom, thought that this was a national objective that the States would not necessarily find room in their budgets to support.

Ms. ERVIN. One of the two other things to point out about this is that this is a 50/50 cost-shared effort. There is considerable match.

Also, the ICP program, and some of the assistance to the States, is especially important now that the petroleum violation escrow funds are going down. In 1994—Gail, correct me if I'm wrong—the level was about $127 million for PVE funds?

Ms. McKINLEY. Yes.

Ms. ERVIN. And now it's going down to about $13 million. So it's greatly reducing the financial capability of the States——

GRANT PROGRAMS PRIORITIES

Mr. REGULA. Well, I understand that, but it still ought to be a State and local responsibility. I can understand that in the wave of concern that we had about energy that we decided as a national policy that we should do this, but it's different times. We have different budget constraints.

If you have to make priority choices, which program's going to go? Suppose we have to tell you that you've got to choose one or downsize both. Let's say that the total amount available is about 90 percent of the total amount available now. What would you downsize, the nonresidential or the residential, or both?

Ms. ERVIN. I'd want to look at a number of things. And, again, this is in the context of working closely with you, the Committee, and the staff on our priorities, but I'd want to consider a number of things. One is the biggest bang for the buck. Where do we get the most return for our dollars? Another is looking at the question of, would this happen without us; how vital is the Federal role, or can we make it happen in another way? Third, I would want to look at administrative costs and savings that are possible.

The ICP program is a good example of where we have made some changes in this last two years to streamline the program itself. They are able to do more with the money, and that's one reason why we're able to decrease the budget in this program by a couple of million dollars. But we want to go further. We are exploring right now with the States the feasibility of putting together a block grant program of these various State assistance programs and in that way reduce our own administrative costs, their administrative costs, and give them more flexible tools for meeting their needs.

So administrative efficiencies and opportunities to save money would be one of the criteria I would use in selecting priorities.

AUTHORIZED PROGRAMS

Mr. REGULA. Have you evaluated which of your programs are now authorized and which are not?

Ms. ERVIN. We have done that analysis. I don't have all the information right with me, but I know a number of programs are not authorized right at this time.

Mr. REGULA. Would you submit to us—a list of what you think is not authorized——

Ms. ERVIN. Okay.

Mr. REGULA [continuing]. Because we have an open question as to whether the authorizing committees will object or not object to our appropriating for programs that are not presently authorized. I mean, under the rules of the House, as you know, unauthorized appropriations can be stopped unless they're protected by the rule.

Ms. ERVIN. Okay. I'll do that.

Mr. REGULA. I think we should know, so that we, in turn, can alert the appropriate authorizing committees.

Ms. ERVIN. Good. I'll do that.

Mr. REGULA. All right.

[The information follows:]

AUTHORIZATION FOR ENERGY EFFICIENCY PROGRAMS

The Department of Energy does not consider programs included in the Interior and Related Agencies Appropriations bill to be unauthorized if they lack an annual authorization of appropriations. A determination whether, absent an annual authorization, these activities are "considered to be unauthorized" begins with consideration of the House rules pertaining to appropriation bills. House Rule XXI(2)(a) provides that "[n]o appropriation shall be reported in any general appropriation bill...for any expenditure not previously authorized by law, except to continue appropriations for public works and objects which are already in progress." Brown, Constitution, Jefferson's Manual, and Rules of the House of Representative of the United States, H. Doc. No. 405, 102d Cong., 2d Sess. 615 (1992) (hereinafter cited as Jefferson's Manual). Although the interpretation and application of the House rules is a purely internal matter for the House of Representative, and DOE does not presume to make judgements about such matters, the following represents DOE's legal analysis to date on whether a point of order on the basis of House Rule XXI might be sustained against the Department's Interior and Related Agencies Appropriations.

The text of Rule XXI(2)(a) itself strongly suggests that appropriations for activities authorized by permanent law qualify as having been "authorized by law." The rule contains no limitation or qualifier in its text indicating that the authorization "law" must be annual or recurring. Common sense suggests that when the Congress has by law commanded that a particular activity should occur, with or without express temporal or dollar limitation, the policy objective of the rule "to prevent delay of appropriation bills because of contention over propositions of legislation" has been fully met. Jefferson's Manual at 617.

The precedents under Rule XXI(2)(a) support the conclusion that general statutory authorization of program activities provides sufficient authority to shield appropriations for such activities from a point of order under Rule XXI(2)(a). See Jefferson's Manual at 622-623. General grants of statutory authority, including those contained in organic acts, constitute sufficient authorization to support appropriations where the general statute does not explicitly require specific or annual authorizations. Id. at 623. For example, it has been ruled that a general authorization to conduct an educational grant program was sufficient to meet the requirement. 124 Cong. Rec. 16778 (June 8, 1978).

Thus, the question whether particular activities supported by the Department's Interior and Related Agencies Appropriations are "unauthorized" within the context of House Rule XXI(2)(a) would turn on whether the original statutory authority for those activities contains an explicit requirement for annual authorization. A review of recent Interior and Related Agencies Appropriations acts indicates that the statutory object of a majority of the appropriations is carrying out the Department of Energy Organization Act, 42 U.S.C. 7101, et seq. (the DOE Act). Section 660 of the DOE Act, 42 U.S.C. 7270, provides that "[a]ppropriations to carry out the provisions of this Act shall be subject to annual authorization.[1] Jefferson's Manual does not discuss any precedents under House Rule XXI(2)(a) that consider section 660 of the DOE Organization Act.

Points of order have been sustained based on some other statutory provisions requiring specific authorization for activities of an agency. See Jefferson's Manual at 623. For example, points of order were sustained against appropriations for the Department of Justice on the basis of a statutory limitation in the 1976 Crime Control Act. That statutory provision was unambiguous in its breadth and its objective to supplant permanent law as authorization for appropriations:

> No sums shall be deemed to be authorized to be appropriated for any fiscal year beginning on or after October 1, 1978, for the Department of Justice (including any bureau, agency, or other similar subdivision thereof) except as specifically authorized by Act of Congress with respect to such fiscal year. Neither the creation of a subdivision in the Department of Justice, nor the authorization of an activity of the Department, any subdivision, or officer thereof, shall be deemed in itself to be an authorization of appropriations for the Department of Justice, such subdivision, or activity, with respect to any fiscal year beginning on or after October 1, 1978.

Pub. L. No. 94-503, section 204. Points of order also have been sustained against appropriations for the Federal Trade Commission based on statutory language that "[f]or fiscal years ending after 1977, there may be appropriated to carry out [the Federal Trade Commission's] functions, powers, and duties, only such sums as the Congress may hereafter authorize by law." 88 Stat. 2203 section 207 (repealed 1980).

Both of these statutory limitations explicitly foreclose reliance on prior existing permanent law as sufficient authorization for appropriations, thus seeming to require future enactments of authority. The DOE Act provision is not so restrictive. In contrast to the Crime Control Act, for example, Congress in section 660 did not use the phrase "[n]o sums shall be deemed to be authorized to be appropriated...except as specifically authorized." The statutory text of section 660 does not by its terms supplant existing permanent law as authority that might be cited for subsequent appropriations, or indicate that future legislative enactments would be required to afford such authority. Instead the text of section 660 suggests only a statutory reservation of an option for the Congress, through legislation that might be reported by the various[2] committees having jurisdiction over parts of the Department's activities, to frame appropriations on an annual basis. The legislative history of section 660 seems consistent with this view of its intended effect.[3]

---

[1] Certain of the other statutes administered by the Department contain provisions similar to section 660. See, section 111 of the Energy Reorganization Act (42 U.S.C. 5821), section 261 of the Atomic Energy Act (42 U.S.C. 2017), and section 16 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5915).

Thus the Department has since the late 1970's construed the terms "shall be subject to annual authorization" in section 660 to mean only that the appropriation in any year is susceptible to a point of order if it exceeds the level of any annual authorization that already has been enacted into law at the time the appropriation item is being considered by the House. DOE believes that is the correct construction of the provision. Note that Congress has not enacted a civilian authorization bill for DOE's activities since 1981.

Finally, it is noted that House Rule XXI has no impact on the validity of an appropriation once it is enacted into law, regardless of whether a successful point of order might have been made during its consideration by Congress. There is no constitutional requirement that an appropriation act be preceded by a specific authorization. General Accounting Office, Principles of Federal Appropriations Law at 2-34 (1991). In the absence of authorization legislation, the appropriation itself, in effect, carries it own authorization. *Id*. at 2-57. "An authorization act is basically a directive to the Congress itself which Congress is free to follow or alter (up or down) in the subsequent appropriation act. A statutory requirement for prior authorization is also essentially a congressional mandate to itself. Thus, for example, if Congress appropriates money to the Defense Department in violation of 10 U.S.C. section 114 [requiring specific authorizations for certain appropriations], there are no practical consequences. The appropriation is just as valid, and just as available for obligation, as if section 114 had been satisfied or did not exist."[4] *Id*. at 2-35.

---

[2] According to a report by the House Committee on Committees, in 1980, shortly after enactment of the DOE Act, 83 committees and subcommittees claimed jurisdiction over energy issues in the House alone.

[3] The conference-adopted provision was that which previously had been adopted by the House, which had been described in the House committee report as providing generally for annual authorizations for the Department's contemplated activities, as opposed to the provisions of the Senate-passed bill that arguably would have foreclosed many of the Department's activities from the possibility of any annual authorization scrutiny whatsoever. *Compare* S. Rep. No. 164, 95th Cong. 1st Sess. (1997) *with* H.R. Rep. No. 346, 95th Cong. 1st Sess. (1977), in which the former would have included a "such sums" authorization for all Departmental programs except those conducted under several enumerated statutes, and the latter which made all Departmental programs "subject to" the overlay of any annual authorizations.

[4] Note, however, that Congress has in at least one circumstance imposed statutory limitations that appear to extend to the ability of an agency to obligated appropriated funds where there is no corresponding annual authorization of appropriations. *See* 22 U.S.C. 2680(a)(1) (limiting obligation or expenditure of funds appropriated to the State Department either without current authorization or in excess of currently authorized amounts).

STATE GRANT PROGRAM

Ms. ERVIN. One final thought in the context of the State programs, I'd like to just add one thought to that. State energy offices and our local partners are a vital part of our capability to do our jobs at the Federal level. They are the infrastructure out there that knows their business community needs better than we do and their schools and hospital needs. So they're a part of the entire national infrastructure. They're also going through a time where the PVE funds are rapidly decreasing. The vitality of that system really helps us achieve our national objectives at less cost. Remember in my earlier comments I said that our budget, even though it's increasing in this 1996 budget, it would have been higher if we were not greatly leveraging the work through various partners, including State energy offices.

LIGHTING COLLABORATIVES

Mr. REGULA. You requested $988,000 for a new program called Lighting Collaboratives, as part of the Climate Change Action Plan. Why should the Department of Energy be involved in commercializing lighting technology? And this may be part of what you spoke to with your exhibits here.

Mr. KRIPOWICZ. Essentially, the collaboratives would look at technologies to replace incandescent lamps, which are essentially the least efficient lighting source that we have. One of the things that would be done is, again, just technical assistance to the firms looking at this and also trying to aggregate some markets, for instance, for Federal purchases of some available technologies, so that they can get sufficient production quantities to drive the cost down, so that they can do these on an overall basis. It's not meant to subsidize the production. It doesn't do that at all.

Mr. REGULA. Just development?

Mr. KRIPOWICZ. In most of these cases there is a considerable amount of development that has already been done. This is more technical support than development.

Mr. REGULA. Oh, take that——

SULFUR LIGHT BULBS

Ms. ERVIN. Sulfur bulb?

Mr. REGULA [continuing]. Sulfur bulb, I guess, for lack of a better description.

Ms. ERVIN. Careful.

Mr. REGULA. What portion of the development cost was paid with Federal dollars and what portion with private?

Mr. KRIPOWICZ. We invested—there are two types, as Assistant Secretary Ervin described. There's a high-power type for large-scale uses and a low-power type. For the high-power type, we have put in approximately $1 million to the company that's developing this, and they have provided close to 50 percent match in terms of the funds that they have put into it. You have to remember, too, that this is a small company.

Mr. REGULA. But it would seem to me General Electric and Westinghouse who produce a lot of bulbs would develop this because there would be a large market.

Mr. KRIPOWICZ. But this particular person has the——

Mr. REGULA. Does he have a patent on this?

Mr. KRIPOWICZ. He has patent rights to the technology.

Mr. REGULA. Which he can, of course, license?

Mr. KRIPOWICZ. He eventually could go to General Electric if he didn't want to make as much money himself. This looks like it would be a very profitable item, so I'm sure he wants to hold it as close as he can to himself.

Mr. REGULA. So this company would anticipate marketing this new lighting equipment?

Mr. KRIPOWICZ. Yes, sir, and he will have to work with somebody to market the light pipe along with it because you have to have both portions of the technology. So he would be involved with other people in the industry. We're not providing any direct funding to do that.

Mr. REGULA. You have a million dollars invested in the development of this bulb?

Mr. KRIPOWICZ. The development and the demonstrations that we've done so far.

Mr. REGULA. Right.

Mr. KRIPOWICZ. Yes, sir.

Mr. REGULA. You actually have a lighting fixture down at DOE that you're utilizing?

Ms. ERVIN. Yes.

Mr. KRIPOWICZ. Yes, sir, it's right as you drive past the entrance. The Department of Energy, if you drive by there at night, is very bright. It's extremely bright. Compared to what was there before, it's almost like daylight.

Mr. REGULA. What—does this thing plug into the end of a tube and the tube plugs into what?

Ms. ERVIN. To this microwave unit. I'd be happy to show you this——

Mr. REGULA. I'll have to take a look at that.

Ms. ERVIN [continuing]. And also the Air and Space Museum.

Mr. REGULA. These are sort of hand-crafted, though? They're not a production item at this time?

Ms. ERVIN. That's correct.

Mr. KRIPOWICZ. Yes, sir.

Ms. ERVIN. That's right.

COMPACT FLUORESCENT LIGHT BULBS

Mr. REGULA. I see the bulbs advertised that have a life of many years for around $17, $18—are those something that was developed by DOE?

Mr. KRIPOWICZ. Actually, that technology was not developed by the Department of Energy. Compact fluorescents were developed by the lighting industry.

Mr. REGULA. Then the marketplace responds?

Mr. KRIPOWICZ. Eventually they did, yes.

Mr. REGULA. Okay.

Ms. ERVIN. Part of the Lighting Collaborative that Bob was just talking about has to do with that compact fluorescent. It's costing, for example, an average one—and you were explaining this to me just recently—$15 because part of the expense, maybe 50 percent of the cost of that, is the electronic appliance that is associated with what is built into the bulb. Part of the logic of this collaborative, then, is to put that electronic device in the lamp base itself, so you don't have to duplicate it in every lamp. That could cut the cost of the bulb down 50 percent. On the other hand, the lamp base itself might have an imperceptible increase in price because of the economies of scale.

FEDERAL ENERGY MANAGEMENT PROGRAM

Mr. REGULA. The Federal Energy Management Program has been around since the mid-seventies. As I understand it, you've managed programs for other agencies. Why shouldn't the Federal agencies handle this on their own at this juncture?

Ms. ERVIN. Under EPACT, we have aggressive new challenges to meet in terms of improving the energy efficiency of the Federal Government and under the Executive Order as well, a 30 percent reduction of energy consumption by the year 2005.

Mr. REGULA. This is for the Federal Government overall?

Ms. ERVIN. That's for the Federal Government.

Mr. REGULA. And you manage the achievement of that target?

Ms. ERVIN. That's right, we have the lead in helping agencies do that.

I'll tell you, I personally underestimated some of the challenges associated with doing it. One of the tools that we are promoting is the energy savings performance contracting. That's a device that will allow private companies to come in and do retrofits with no upfront capital cost to the federal government. They——

Mr. REGULA. A private company would come in to a Federal agency——

Ms. ERVIN. Exactly.

Mr. REGULA [continuing]. A building, for example, and retrofit it——

Ms. ERVIN. Yes.

Mr. REGULA [continuing]. For better energy efficiency?

Ms. ERVIN. That's right. In fact, we did that at the Forrestal Building.

Mr. REGULA. Well, do you pay for it or does the agency?

Ms. ERVIN. Well, that's the beauty of the plan. The private service company pays for the entire retrofit. And in the case of the Forrestal Building, it was at cost, before the retrofit—let me just refer to this, so I get the figures straight. Before the retrofit, the electricity used for lighting the Forrestal Building cost about $539,000 per year. The lighting retrofit is saving more than $340,000 per year, over the seven-year course of this project, with the energy service companies——

Mr. REGULA. That's a tremendous gain.

Ms. ERVIN [continuing] About a million in utility bills. Now the beauty of this was that the total project cost $1.36 million, but we didn't pay any of the upfront costs. They assumed all of those capital costs and they regained their—or they recouped that——

Mr. REGULA. "They" meaning the private sector group that did this?

Ms. ERVIN. The private sector, through the savings in our utility bills. Now that's a wonderful instrument to use in many cases, but the mechanics of developing Federal procurement instruments that will accommodate this easily throughout the Federal Government——

Mr. REGULA. Yes, I was going to say, how does this work mechanically or paperwise? The company comes in, retrofits. Do they get a percentage of the savings?

Ms. ERVIN. Yes, exactly. And the terms can vary considerably. One of the things that we're doing—and, in fact, we're going to have our proposed rule out when? In April? We've been working a long time on getting the ESPC rule that would allow us to standardize this throughout the Federal Government and to use it to——

Mr. REGULA. This procurement procedure?

Ms. ERVIN. The procurement procedure; that's right.

Mr. REGULA. With the private company, that they will get a percentage of the savings?

Ms. ERVIN. That's right.

Mr. REGULA. That's pretty innovative.

Ms. ERVIN. It is innovative, and we think it has great use in the FEMP program. But the difficulty, and what I had underestimated originally, was the newness of the instrument——

Mr. REGULA. Yes.

Ms. ERVIN [continuing]. The unfamiliarity that energy managers have with this instrument. They don't have comfort with it because it is a totally different vehicle.

Mr. REGULA. Yes.

Ms. ERVIN. And developing trust in it. So we think we're going to make significant progress. In fact, we're planning on doubling the amount of performance contracts we have in 1996 alone and we'll probably increase after that. All of this, though, does take some time, and over the last two years the FEMP program has really made remarkable progress in building the infrastructure for making this kind of rapid progress. We have some good success stories, and I think over the next couple of years this will infiltrate into the various Federal programs much more quickly.

Mr. REGULA. Enough successes to justify your continued existence? [Laughter.]

Ms. ERVIN. Well, you know, here's a case where, for a dollar of Federal money, you can get $10 in savings. It sounds like a prudent investment to me.

Mr. REGULA. You'd better talk to your President, and I probably ought to talk to a few of our leaders. [Laughter.]

Okay. Well, we have a lot of questions for the record that we will submit to you.

Ms. ERVIN. Okay.

Mr. REGULA. With that, we thank you for coming and this completes the hearing for today. The committee's adjourned.

[COMMITTEE NOTE.—Additional committee questions and answers for the record follow:]

ADDITIONAL COMMITTEE QUESTIONS

Overview of Budget Request

Question: It is likely that the Committee will have a much lower funding allocation in FY 1996 than in FY 1995. What programs would you eliminate if you were held to the FY 1995 funding level?

Answer: The Department is eager to work with the Committee to assess program priorities for the Energy Efficiency Programs to assist Congress if budgetary constraints preclude them from funding the entire request.

We will work with Congress to determine priorities for additions and reductions in Energy Efficiency and Renewable Energy programs. Our priorities start with new initiatives to empower States, industry, and energy consumers to overcome the barriers impeding the large reservoir of near-term, cost-effective efficiency opportunities. Also, this is the time to mobilize industry, States, and laboratories to exploit energy efficiency as a least-cost approach to pollution prevention. This budget request also includes high-priority work with Federal agencies to establish Federal facilities that will serve as energy conservation models and to open markets for alternative-fueled vehicles.

We fully appreciate the difficult decisions Congress must make in determining allocations for programs. However, the FY 1996 Congressional Budget for Energy Efficiency programs is a balanced program of R&D, commercialization, and long- and short-term activities and represents a budget objectively aligned with essential national goals: satisfying the Nation's energy needs, reducing our vulnerability to oil shocks, protecting the environment, and improving the economy.

Question: How would your budget change if you had a cut of 20% below the FY 1995 level. Please provide details in priority order for the record.

Answer: Again, we fully appreciate the difficult decisions Congress must make in determining allocations for programs. Currently, we are completing a comprehensive review of the Energy Efficiency programs to permit an objective prioritization based on criteria such as energy provided or saved, reduction in oil imports, pollution avoided, return on investment, and jobs created. This process is necessarily dependent on a tremendous amount of analysis, stakeholder input, and objective review--work which is on-going. It would be premature to identify lower-priority activities before this analysis is completed. However, the FY 1996 Congressional Budget for Energy Efficiency programs is a balanced program of R&D, commercialization, and long- and short-term activities and represents a budget objectively aligned with essential national goals: satisfying the Nation's energy needs, reducing our vulnerability to oil shocks, protecting the environment, and improving the economy.

The Department is eager to work with the Committee to assess program priorities for the Office of Energy Efficiency and Renewable Energy to assist Congress if budgetary constraints preclude them from funding the entire request.

Buildings Sector

Building Systems

The request for building systems is $46,998,000, as compared with $21,502,000 in fiscal year 1995 and $12,472,000 in fiscal year 1994. That's a 119% increase over fiscal year 1995 and a 277% increase over fiscal year 1994. (budget p. 240)

Question: Why is the Department of Energy involved in funding the building of housing and commercial buildings?

Answer: The Department of Energy does not fund construction of housing or commercial buildings. The Department conducts joint research with industry to develop high efficiency building materials, equipment, envelope components and whole building systems for both new and existing buildings. The Department also works with many organizations and decision-makers in the building industry to incorporate the results of buildings research into buildings.

To ensure that the full benefits of energy efficient technologies are realized, the Department may provide funding in cost-shared projects with industry to demonstrate a technology or method. In these projects, Department funding pays only for performance monitoring and analysis of the technology or practice - not for actual construction costs.

Residential Buildings

Question: What is the Building America program and how much are you spending on this program in fiscal year 1995?

Answer: The DOE Building America program is developing industry collaboratives to implement systems engineering approaches to accelerate the development and adoption of advanced housing innovations for energy efficient, environmentally sensitive, affordable, and adaptable residences.

Building America's multi-disciplinary industry teams include major builders, material suppliers, equipment manufacturers, designers and developers. Teams use systems engineering approaches to integrate innovations by making cost and performance trade-offs at the system level, with the overall objective of achieving a 50% reduction in energy use and construction waste in new residential buildings. Building America team members have committed over $30 million in direct cost participation over the next three years to do full scale system engineering housing technology innovations. Over 400 test homes are planned. The homes are expected to reduce energy use, construction time, and construction waste by fifty percent. Builders in the program will transfer systems innovation to 15,000 production homes within 5 years, resulting in direct savings to consumers of $7.2 million/year in annual energy costs. Innovations used by lead builders will diffuse to all major builders within 7-10 years, resulting in direct savings to consumers of $269 million/year.

With the accelerated development and adoption of advanced residential building systems by builders we expect that 70% of production houses will incorporate

Building America innovations within 7-10 years. Fiscal Year 1995 spending is $4,486,000.

Question: What specifically would you do with the $3,341,000 increase requested for residential buildings programs?

Answer: $1,953,000 provides for development of builder training and award programs. Energy Efficiency Showcasing and Education are only one part of the "Energy Partnerships for Affordable Homes" umbrella initiative. The new umbrella initiative consists of five elements: Market Transformation in Home Sales, Energy Efficient Financing, Energy Efficiency Showcasing and Education, the National Retailer Initiative, and Affordable Housing for Low-Income Families. Going beyond our current work with NAHB, this request will improve the efficiency of new and existing housing by working with builders, architects and contractors to provide ongoing education and training, and by developing new trade partnerships to showcase energy efficient housing and develop and implement builder/architect recognition programs.

$1,388,000 will allow the four Building America teams to be well into their test house and initial neighborhood construction projects. IBACOS will have the 8 neighborhood cluster concept houses in California underway and a new Laboratory test house in a hot humid climate. The Steven Winter Associates team will have two test houses under construction along with 200 near-term prototype houses. The Building Sciences team will have begun construction of 100 prototype houses and the Hickory Consortium team (whose contract is currently under negotiation) plans to have two test houses underway in FY 1996.

Commercial Buildings

Question: You have asked for an increase of $3,962,000 in commercial buildings programs to initiate a "sustainable buildings" program. Please describe this program.

Answer: The proposed sustainable buildings program is designed to accelerate the research on, and widespread construction and renovation of buildings that combine renewable and energy efficiency measures, and environmentally-sensitive materials/products, design and construction practices. The result is buildings that are more affordable to build, renovate and operate. For this activity $2,979,000 is requested. A distinguishing feature of the program is the ability to leverage existing local initiatives to develop the know-how and data required to prove to industry that advanced technologies perform as predicted. This proposed program is responsive to industry's demand for performance data under multiple real-world conditions.

The sustainable buildings program will build upon, on a cost-shared basis, local/regional economic development partnerships in various geographic/climatic regions, to define required R&D and approaches for expanding sustainable building practices. Local partners will identify the best mix of (1) energy efficiency, renewable energy, and indoor air quality strategies, and (2) waste stream management strategies to reduce construction site wastes, recycle construction and renovation site wastes, and on-site water runoff. By making use of these waste streams for productive purposes, it is possible to reduce the energy demand required to produce building materials, and the cost of waste disposal. Local initiatives may include research on new products, thereby, expanding the local economic base.

Specific activities will be based on local/regional requirements and the extent to which these initiatives allow the Department to test and replicate the knowledge gained from its building R&D programs at a scale appropriate to facilitate adoption by industry. Activities are likely to include information, design assistance, building and material performance monitoring, and research on new products (i.e., products from construction and renovation site wastes). Funds for the construction/renovation of buildings resulting from activities of the local/regional partnerships will be provided by the local builders/developers/owners.

Know-how from building R&D programs such as Building America, Rebuild America, Exemplary Buildings, USH_2O, and Indoor Air Quality will be made available and tested for replicability. Information on recycled and recyclable wastes, construction value engineering, and on-site waste water management and other waste minimization approaches will also be provided to help in developing cost-effective energy/waste management strategies, and to encourage research on new, non-toxic building materials.

The results will be documented in case-studies, including the results from the monitored buildings. In addition, existing design tools/guidelines may, in time, be expanded to include new products and waste management approaches.

Question: How will energy services companies be involved in the sustainable buildings program?

Answer: The Commercial Buildings budget request includes an initiative to develop low-interest financing instruments, in cooperation with the Small Business Administration (SBA), for use by Energy Service Companies (ESCOs). This initiative is distinct from the sustainable buildings program initiative. The goal of this $993,000 ESCO/SBA initiative is to test these different financing packages in real markets and determine their effectiveness. Because ESCOs tend to be small businesses, they often must pay higher interest rates on loans they seek to finance the cost of energy efficiency and renewable energy measures. Since the service ESCOs provide is to underwrite the cost of energy efficiency and renewable measures in return for a share of future energy savings, high interest rates limit their market.

Within a community, the SBA works with banks which often support local economic development programs. It is quite possible that a business working with DOE within a local community also may be a partner in the ESCO/SBA initiative. This same business may also be participating in the Department's Sustainable Buildings program.

Question: What role will the Small Business Administration play?

Answer: The Small Business Administration, with funding from the Department of Energy, will establish a revolving loan pool designed to provide low interest loans to newly formed energy service companies (ESCOs). A main obstacle to the sustainability of newly formed ESCOs is their inability to secure low-cost financing. Third party contracting is seen as a high risk investment by many financial institutions, so they, in turn, impose inflated interest rates on these types of loans. This pool will remove a major impediment to fledgling ESCOs and move the sustainable building industry in a positive direction.

Retrofit Technologies

Question: What is "Rebuild America" and how does it differ from "Building America"?

Answer: Rebuild America is a five-year Department of Energy (DOE) voluntary program which supports the formation of community and regional partnerships to design and carry out energy savings retrofits on existing commercial and multifamily buildings, while Building America focuses on "system engineering" approaches for new buildings in the residential sector. The technical opportunities, financing, and implementation of energy-savings methods in new construction are extremely different than related techniques in existing buildings. For example, new construction can use structural materials that save energy, while retrofits must focus on non-structural replacements of things like windows and lighting.

In Rebuild America, organizations making up partnerships include government agencies, economic development organizations, private businesses, utilities, and others. DOE will help partners upgrade the energy efficiency of their buildings by providing information on technology cost and performance, energy retrofit and financing strategies, and limited on-site assistance. DOE is working with organizations including the U.S. Conference of Mayors, U.S. Chamber of Commerce, National Association of Counties, International City Management Association, and others to increase the outreach and effectiveness of program.

DOE will also provide "seed" money to 10-15 partnerships in FY 1996 to accelerate projects across the nation. Criteria for project selection includes energy savings, floorspace covered, potential for replication, and quality of business plan. As a result of the private and public sector efforts to capture cost effective energy efficiency opportunities, building owners participating in Rebuild America will reduce their annual operating costs by $650 million by the year 2000.

Building America focuses on support for consortia who can apply system engineering concepts to the design, construction and delivery of *new homes*. System engineered approaches will result in homes that are of higher quality and are less costly to heat and cool. In contrast, Rebuild America focuses on accelerating cost effective energy retrofits in existing commercial buildings and multifamily housing.

Question: For the record, please provide a breakout of the requested increase for retrofit technologies along with a comparison by project of fiscal year 1995 and 1996 funding with a brief description of each project in fiscal years 1995 and 1996.

Answer: Besides Rebuild America, the two major components of the FY 1996 retrofit technologies program are: (1) Existing Buildings Efficiency Research

(EBER); and (2) Affordable and Efficient Public and Assisted Housing.

The EBER program supports applied research and demonstrations to develop and verify advanced technologies and management techniques with the ability to reduce energy use in existing buildings by at least 35% by the year 2010, and up to 50% by the year 2030. Examples of activities supported through the EBER program include improved duct sealing technologies, advanced diagnostic and monitoring procedures, techniques to improve the use of private performance contracting, and the development of field partnership arrangements with utilities, communities, and organizations to develop guidelines and protocols to implement and evaluate energy efficient strategies. Proven technologies and management procedures are then utilized and deployed through DOE's Rebuild America, Federal Energy Management, and Public and Assisted Housing Programs. The program addresses needs in commercial, industrial, military, multifamily, and residential buildings managed by both the public and private sectors. The FY 1995 budget for the EBER program was $1,275 million; the FY 1996 EBER budget request is $1,323 million.

EBER's program is further described within four areas:

(1) Diagnostic and retrofit research which looks at advanced mechanical equipment, duct design and testing for both residential and commercial buildings, monitoring and control systems and advanced envelope retrofit technologies which have a 1995 budget of $500 thousand and FY 1996 budget request of $643,000 to refine diagnostic and design techniques for improved heating, air conditioning and ventilation systems in commercial buildings;

(2) Retrofit guidelines and protocols that illustrate applications to save up to 35 percent of the energy used in existing buildings. Guidelines have been prepared for military family housing and mid-income housing. FY 1995 request was $200,000 and FY 1996 request is $162,000;

(3) Field testing to verify energy savings in small commercial buildings including audit procedures and operation protocols. Determine maximum and cost-effective savings potential and establish baselines by building type and climate locality. The FY 1995 budget was $475,000 and the FY 1996 budget request is $440,000;

(4) Delivery and transfer of validated retrofit technologies. FY 95 budget was $100,000 and FY 96 budget request is $78,000.

The concluding DOE-HUD initiative is a key element within DOE's broader, "Energy Partnerships for Affordable Homes." The element is based on our DOE-HUD initiative which conducted pilot and demonstration projects to determine the energy savings potential in public and assisted housing. It is at the large scale delivery of technical, financial and project management assistance that can improve energy efficiency of HUD-aided public and assisted housing. Technical assistance from DOE will be provided directly to organizations and individuals who manage public and assisted housing at local and community levels. The program seeks to reduce the $4 billion annual utility cost currently paid by HUD by achieving average 30% energy efficiency gains in more than a million HUD-aided housing units by the year 2000. This is a major initiative for which no funds were allocated in FY 1995. FY 95 funding of $208,000 finalizes results and assistance for ongoing projects in Atlanta, Boston and Sacramento. No funds were allocated in FY 95 to develop a national and community deployment goal to upgrade over 1 million units of Public and Indian Housing, and Assisted housing to a level of energy efficiency equivalent to that of market-rate housing. The FY 1996 budget request is $5 million.

Best Practices

Question: An increase of $2,021,000 is requested for Best Practices. What is this program?

Answer: The Best Practices program identifies and promotes the "best practices" in building design and operation. The Department promotes these practices by developing and providing energy design tools for architects, engineers, utilities, and builders to optimize energy performance in the design and operation of buildings. We develop tools with industry partners to ensure that they are sensitive to market demands. For example, the program has linked energy optimization software in already existing and commonly used building design software through a strategic partnership with Softdesk, a leading computer-aided design firm. Further, the Department is working in partnership with the Electric Power Research Institute (EPRI), the Passive Solar Industries Council (PSIC) and the international community. The Exemplary Buildings, in partnership with industry, establishes the potential of integrated advanced renewable energy and energy-efficient design strategies for new and existing buildings. One new activity, "Design Fee Reform," is an initiative to work with designers and develops to explore alternative fee/contract structures that would provide an increased incentive for designers to optimize the energy performance of the building.

Question: Another initiative DOE plans to start in fiscal year 1996 is called "buildings design fee reform." How would you use the $988,000 requested for this initiative?

Answer: The principal thrusts of this initiative are to (1) determine the extent to which customary design fees inhibit the ability of architects and engineers (A&Es) from incorporating cost-effective energy efficiency and renewable energy features in their building designs, and (2) develop and evaluate incentive schemes helping to defray these additional costs. The funds requested would be expended for the following activities:

- Identify the influence of fees on architects and engineers ability to design buildings for energy efficiency and renewables and factors keeping investors from paying the added fees.

- Design model incentive structures/programs. These may include various performance based fee structures including shared energy savings arrangements (e.g., similar to the system used by Energy Services Companies or ESCOs).

- Implement joint pilot programs with utilities. This would be done on a cooperative basis with utilities that have already developed design fee incentive programs for their demand-side management (DSM) programs.

- Evaluate pilot program results.
- With industry develop model protocols/procedures/A&E agreements for use by private and public sector organizations.

Question: What makes up the balance of the $2,021,000 increase for Best Practices?

Answer: Of the $2,021,000 increase, we allocated the balance, $1,033,000, was allocated for accelerating development and introduction of energy design tools, increasing involvement of private sector through cost-shared work, and eliminating duplication of effort by different government agencies.

Accelerating future planned development and introduction of energy design tools: Tools that the private and public sectors say they need now--building energy simulation engines (DOE-2 and SPARK), early design analysis (Energy Design Advisor - formerly called Energy Design Advisor), commercial computer-aided design (CAD) integrated energy evaluation (Softdesk Energy), and passive solar, low-rise building design (Energy-10). Of the programs listed, DOE-2 and Softdesk Energy are currently available and Energy-10 is being tested.

Increasing involvement of private sector through cost-shared work: Because the building industry already considers the Department's design tools work to be reliable, independent, and without bias, several private sector companies approached us this year, wanting to start new work with our existing simulation engines. They offered to cost-share the work on a 50/50 basis. Although our long-term plans include work in these areas, we would be unable to take advantage of the private sector cost-sharing--leveraging public funds with private sector funds--without increased appropriations.

Eliminating duplication of effort by different government agencies: The US Army Corps of Engineers' Construction Engineering Research Laboratory (CERL) approached the Department recently to request joint development of a single U.S. government-sponsored simulation tool--combining the best features of each program, DOE-2.2 and BLAST.

Question: How are you involved in utility demand side management programs?

Answer: Many utilities use our performance simulation tool, DOE-2, to develop and evaluate their demand-side management programs. Several large utilities directly sponsor new work (more than $500,000 in FY 95) to accelerate enhancements in our existing design tools (DOE-2/PowerDOE) to meet their specific demand-side management program needs. They have also supported joint development of new tools that meet the needs of building designers in early stages of design (Energy Design Advisor). At the request of, and with the participation of utilities and the buildings industry, the Department is developing a new energy design tool for smaller commercial and institutional buildings (Energy-10). The Integrated Resources Planning program performs the bulk of DOE's research and technical assistance on demand side management.

Building Envelope

Question: The request for the building envelope program is $11,999,000, an increase of 25% above the fiscal year 1995 level. The big increase in building envelope is in the windows and glazings program.

What are you doing in electrochromic windows research and why is funding for this work scheduled for a $1.5 million increase in fiscal year 1996?

Answer: The budget increase is for two areas: Phase 2 of the Electrochromic Industry/Government Consortium to develop electrochromic windows that are commercially available in 1998; and initiation of the "Superwindow Collaborative".

In FY 1994 an industry cost-shared initiative, the Electrochromic Industry/Government Consortium, was launched to develop commercially available electrochromic window prototypes by 1998. The FY 1996 increase will allow the continuation into phase II of the project while maintaining support for critical fundamental research at the National laboratories. Phase II of the project will focus on the R&D needed for scaling up prototypes to architectural-window size devices. This phase will be cost shared at least 50-50 by industry. The primary goal is to solve the technical problems in producing architectural-window scale prototypes and verify that the multilayer device structure has the durability needed to survive exposure to climatic extremes for building lifetimes.

Need Federal support for electrochromics -- Currently, the risks and level of investment required are high enough to prevent the early development of commercially available electrochromic windows without Federal support. Also, because of foreign government investments in their industry's electrochromic technology, it is difficult for US industry to compete with unless there is a US Federal investment.

Even after more than a decade of fundamental research on electrochromic windows these windows are still viewed as a very risky undertaking by the window industry. This risk is both technical and market based. The technical risk is that there are still no materials systems whose optical properties have demonstrated long term performance meeting desired levels, although some promising candidates systems are now being tested. DOE's willingness to cost share and contribute basic materials science support from the Lawrence Berkeley Laboratory and the National Renewable Energy Laboratory helps reduce this risk. The market risk comes from the unknown reception of a product whose initial cost is likely to be higher than any other mass produced advanced glazing and whose performance is not well defined. DOE's role in promoting market acceptance with unbiased energy savings studies, design guidance, field tests, and demonstration projects will help overcome these risks.

Expectations Regarding Market Entry -- Today, electrochromic rear view mirrors are available in the market place. Commercially available products for architectural applications should enter the market in 1998 as a result of this cooperative agreement. These are likely to be too expensive for mass markets but a good reception in these niche markets (e.g. custom houses) is expected to stimulate more industry investment in production processes that will lower costs. The early products are also likely to be limited in size, thus making them unavailable for large curtain wall applications in commercial buildings. However, fundamental research now underway at the National Laboratories is expected to result in lower costs and larger sizes.

Question: What is the superwindow collaborative initiative; and what will you do with the $1,492,000 requested for this new program? (budget p. 269)

Answer: The new "**SuperWindow Collaborative**" initiative would result in a major transformation of the industry and market to double the average energy efficiency of all windows sold. This initiative builds on the base program's work developing the technical basis for the National Fenestration Rating Council (NFRC) window rating and labeling program, and the base program's work with industry in developing high performance glazing. This shift in program emphasis will capture, for the taxpayer and industry, very substantial benefits from our earlier investments.

Need for Federal Involvement: The benefits to the nation are very large in terms of energy savings for a modest investment. This large energy savings potential can be captured if the today's window market can be shifted from its current average of less than R-2 toward the "best available" technology, of over R-5. The market moves slowly unless prodded by outside forces. Much of the shift from single to double to low-E was accelerated by the actions of a few high end manufacturers targeting cold climates (R-2 -> R-3) and by the impact of tighter standards. The current standards can be met by products already on the market so there is little additional incentive to offer better products. The large manufacturers need to be encouraged to offer higher performance options (R-4, R-5) and smaller manufacturers need pressure and encouragement to upgrade to better off-the-shelf technology today.

Relationship to NFRC: The initiative would work through such organizations as the National Fenestration Rating Council (NFRC) and it's constituent members. However, even the voluntary development of a rating system has required significant Federal involvement in technical and research support as well as financial assistance. The initiative would result in a major transformation of the industry and market -- which builds upon, but far exceeds, the mission of NFRC. The market pull activities planned for the Collaborative would be based on the use of NFRC ratings, but the existence of ratings alone is not a sufficiently powerful market force to drive the majority of specifiers to purchase more efficient products nor is it strong enough to motivate most manufacturers to change their product lines. There are no existing private sector organizations alone who have the mandate and resources to launch such a collaborative on their own. However the DOE collaborative envisions partnering with these organizations to create a critical mass of public-private interest in achieving DOE goals. DOE's role is thus a catalytic role in which its total investment is small compared to that of its collaborative partners.

Goals of Initiative: The goals of the initiative include *doubling the energy efficiency* of the average window sold in 2005. In achieving the goals, the collaborative would improve the thermal properties of the windows sold in terms of both heating and cooling energy properties. The strategy is to work with a variety of groups to create the market pull for these products and then assist all manufacturers, both small and large, to respond to the new market opportunities.

Building Equipment

Question: Why are you terminating your work in advanced desiccant technology for thermally activated heat pumps? ($1,990,000 in '95; no funds requested for '96 -- budget p. 281)

Answer: DOE considers the $1,990,000 for advanced desiccant technology under the Thermally Activated Heat Pump Program to be the appropriate level of funding, when combined with gas industry and manufacturers cost share. A DOE/Industry program plan developed under the FY 1995 funding, to develop and commercialize cost effective desiccant systems, was believed to be adequate to help industry and would have enough "push" for them to continue the program through 1996, and beyond, therefore no FY 1996 funds were requested.

Question: Explain your increase of $482,000 for technology introduction for heating and cooling equipment. Why is the Department engaged in this commercialization effort?

Answer: In fiscal Year 1995 the Department assessed the expected costs and performance of all available and emerging technologies and established voluntary, industry-led consortia with a desire to purchase and install highly efficient heating and cooling equipment (HVAC). Consortia were established with: (1) the hotel and motel industry, (2) the manufactured homes industry, (3) the Consortium for Energy Efficiency and its 35 gas and electric utility members, (4) the National Association of Energy Service Companies, and (5) Procurement Officers for states. The resulting consortia infrastructure establishes the foundation for introducing and installing more efficient heating and cooling technologies. In fiscal year 1995, the Department is developing, with the consortia, field tests of technologies of interest to the members.

In fiscal year 1996, we will continue to support the above existing consortia. We will evaluate the performance of field-tested equipment and we will expand field tests to other heating and cooling equipment. We will provide technical data to consortia members, their utilities, and installers to enable users of heating and cooling equipment to make better informed investment decisions for their firms. Also in fiscal year 1996, we will be forming new consortia. New consortia will represent large national accounts (such as retailers), lending establishments, large institutions (such as health facilities and universities) and so forth. Additional funding will be required to establish new consortia and to continue working with existing consortia on efforts initiated in fiscal year 1995 and new efforts planned for fiscal year 1996.

In response to Section 127 of the Energy Policy Act of 1992, the Department evaluated the potential for the development and commercialization of appliances (including HVAC), which are substantially more efficient than required by Federal or State law. The Department held eight workshops with private and public sector stakeholders. Workshop participants recommended several actions to achieve more rapid introduction of highly efficient technology in the marketplace: 1) technology innovation and information (test and evaluate new technologies), and 2) "market pull" (market aggregation to pool purchasing power, utility and other incentives, and infrastructure and information enhancements). The stakeholders stated that these actions were a unique contribution that the Department could make and that others would not pursue.

More specifically, the Department was told of the concerns of people who decide which technologies to purchase for their firms. The Department heard that an impartial evaluator of the technologies in the market was needed, and that the Department should take on that role. Most firms, the motels and hotels industry is a good example, are not technically oriented. To become so would divert attention from their business. They have told the Department that it could play a crucial role in enabling them to make good economic investment decisions. The right technologies will lower costs, make them more competitive, and enable them to provide the best possible services to their customers.

Question: An increase of $1,991,000 is requested to develop and demonstrate fuel cells for building in cooperation with the Office Fossil Energy. How much is Fossil Energy contributing toward this project?

Answer: The Fossil Energy program will provide no direct support to the building microcogeneration application. The Fossil Energy program has been working primarily with advanced fuel cell technologies for large scale utility applications. These technologies do not appear to be useful for small scale cogeneration in the near future. However, the new Fossil Energy Program under the Climate Change Action Plan dealing with demonstration of fuel cells may provide some opportunity for closer collaboration. These opportunities will be identified by continuing our on-going coordination with the Fossil Energy Program through program reviews, personal contact with program managers, and technical information exchange.

Question: What exactly will you do with the funds for this new fuel cells program? (microcogeneration -- budget p.286)

Answer: Although considerable technical progress has been achieved in fuel cell technology, additional efforts are required to translate this technology base into building sector applications. The initial focus of the microcogeneration buildings program will be on modifying existing fuel cell technology to meet requirements unique to the building sector, which are not being addressed by either the Fossil Energy or Transportation fuel cell programs.

In cost shared programs with industry, the microcogeneration buildings program will initiate development of key technologies to adapt phosphoric acid (PAFC) and proton exchange membrane (PEM) fuel cells to buildings. Enabling technologies include new materials and cell design optimized for heat recovery and natural gas reformation, thermal integration with building heating and air conditioning systems and electric integration with building electric subsystems. Technology advancements would build on the base fuel cell technology developed by other DOE and private organizations.

This program would also assist private industry in meeting fuel cell building application needs such as: developing computer tools, developing universal building installation standards so that fuel cell can be installed under the same guidelines in all locations, analyzing the economic and environmental benefits of fuel cells in buildings.

Question: $988,000 is requested for a new program called "lighting collaborative" as part of the climate change action plan. Why is the Department of Energy involved in commercializing lighting technology?

Answer: The goal of this project is to bring on the market more efficient replacements for incandescent lamps. Incandescent lamps use some 2.2 quads of electric energy annually in the US, costing the public some $15 billion a year. Several major manufacturers have alternative technologies in the laboratory which could save up to 75 percent of this energy. These technologies will need to overcome the major problems that have limited the market penetration of compact fluorescents, the best existing replacement for incandescents. However, to complete this development and be able to manufacture these new technically sophisticated lamps in large quantity at a competitively low price, manufacturers will have to make very large capital investments. One manufacturer estimates its start-up manufacturing costs to be $15 million. Investments of this magnitude are a major barrier for manufacturers since the new technologies currently entail too much technical and market risk compared to the entrenched incandescent lamp. The goal of the Lighting Collaborative project is to provide sufficient market incentive for manufacturers to make the needed investments by forming a collaborative to establish a large volume of initial sales. Under the project, the Department will coordinate large, competitive Federal/state/private purchase commitments for these new products. The Department will also work with electric utilities, local and state agencies to establish other types of market pull incentives. The requested funds will be very highly leveraged. In addition to the purchase commitments, these funds will stimulate manufacturing investments of tens of millions of dollars and could eventually save consumers across all segments of society up to $12 billion a year in electricity costs.

Question: An increase of $474,000 is requested for partnerships for technology introduction for appliances. What have you done to date in this program and why is an increase requested for fiscal year 1996?

Answer: In fiscal year 1995 the Department assessed the expected costs and performance of available and emerging technologies and established voluntary, industry-led consortia with a desire to purchase and install highly efficient appliances.

Consortia were established with: (1) the hotel and motel industry; (2) the manufactured homes industry, (3) the Consortium for Energy Efficiency and its 35 gas and electric utility members, (4) the National Association of Energy Service Companies, (5) laundry consortium (manufacturers, utilities, and EPRI) to test and evaluate efficient washing machines, and 6) procurement officials for states. Additional consortia are being developed. The resulting infrastructure of consortia establishes the foundation for introducing and installing more efficient appliances. In fiscal year 1995, the Department, with the consortia, is initiating field tests of key technologies, organizing large scale purchase commitments to pull new technologies into the market and conducting other market pull activities. Three examples of programs initiated in fiscal year 1995 are described below.

In fiscal year 1995, the Department is providing technical and management assistance to an ad hoc consortium in the Northeast that is planning a large scale purchase (25,000 units) of best available efficiency refrigerators for a public housing authority. These refrigerators save more than 50 percent of the energy used by the units they replace. With the fiscal year 1996 budget, DOE will support the consortium in a mass buy of refrigerators that are more efficient than the best presently manufactured, thereby pulling new technology into the market. These units save an additional 14 percent in energy use. In 1996, DOE will also recruit participants nationwide to increase the size of the mass buy. The objective is to enlarge the mass buy to a level that will cause manufacturers to convert their entire production of 1.5 million apartment-size refrigerators to the highest efficiency levels.

In fiscal year 1995, the Department is providing technical assistance to a consortium of the manufactured homes industry, utilities, and appliance manufacturers in the Pacific Northwest. The Department has assembled, with the consortium, a package of cost-effective appliances which save 20 percent of the energy used by conventional appliances and is brokering utility rebates to help finance the appliances. In fiscal year 1996, the appliance package will be enlarged with space heating heat pumps, heat pump water heaters, improved washers and dryers, and other appliances, with an energy savings of up to 50 percent. In 1996, DOE will also expand the program to other regions of the country and to builders of conventional homes through additional partnerships.

In fiscal year 1995, the Department established the hotel and motel consortium and, as its first technology introduction, will field test a laundry water heat reclamation and filtration unit. This unit will save 30 percent of the energy and 65 percent of the water associated with laundering. In fiscal year 1996, the Department will promote a mass buy of the filtration technology if proven by the field test. Also in 1996, as requested by the consortium, DOE will initiate technology introduction activities for technologies such as packaged heating and cooling equipment and lighting controls.

One of the Department's major recent accomplishments was the demonstration of laboratory prototypes of the sulfur lamp at the Forrestal building and the Smithsonian National Air and Space Museum. With the Department's continuing development of the high power sulfur lamp expected to culminate in initial product introduction in 1996, intensive organizing of market pull partnerships has begun. A jointly-funded demonstration will be started in a large Post Office facility in 1995, with the Department monitoring energy results and evaluating productivity effects. With the requested 1996 budget, several additional demonstrations will be conducted in commercial buildings which typify major market segments. One of the Department's goals in these demonstrations is to stimulate light fixture manufacturers to develop a variety of fixtures for the unique sulfur lamp. At present, the unavailability of fixtures is a critical impediment to early deployment of this exciting new technology. The market pull approach will obviate a major Department R&D effort to develop new fixtures.

Codes and Standards

Question: Describe your efforts with the States to implement and enforce energy standards in residential and commercial buildings.

Answer: Four regional workshops were conducted to identify and understand the state's information and training requirements based on the needs of the regional, state and local stakeholders. In response, the Department has been providing technical assistance to the states in the form of core materials and training programs designed to be tailored to state needs and experience from other states with exemplary programs. Materials such as codified versions of voluntary standards, code compliance software programs to assist designers, users manuals, and simplified tools have been included. Exemplary state programs and materials that are transferrable to other states have been sought out and are being packaged. Expert testimony has been provided on request at state hearings. Assistance has also peen provided in drafting and reviewing legislation and regulations updating State codes.

Question: What is the cost sharing by the States?

Answer: The incentive funding grants require 25% cost sharing and provide evaluation credit up to 30 percent. Proposals received offered an average of 42 percent in matching funds. No cost sharing is required to receive technical assistance.

Question: How many States are currently participating in the program?

Answer: Thirty six proposals for incentive funding have been received. The proposals involved 42 states and territories (some proposals included regional partnerships. All states and territories are eligible to participate in the program. Technical assistance has been provided to 42 states to date.

Question: How would you use the additional $2,129,000 requested for this program in fiscal year 1996?

Answer: The increase of funding from FY 1995 to FY 1996 will support providing technical assistance and incentive funding to States to respond to the legislative requirements of EPAct. Technical support to states includes developing and implementing programs tailored to specific States and user groups to provide a range of technical materials, including information to State officials about code requirement options; promotion of energy efficiency benefits to new home buyers and builders; compliance and educational materials; training programs for architects, engineers, code officials, and home builders; advocacy assistance; model legislation or regulations; testimony on technical and administrative energy code implementation; and enforcement issues at legislative and administrative hearings.

Question: Why does the Department of Energy feel it needs to be involved in this program rather than leaving it to the States to enforce?

Answer: The Department is not involved in enforcement of any State codes. Rather the Department provides technical and financial assistance to states to implement their updated building energy efficiency codes. Some states have requested that assistance for developing compliance forms and setting up plan review and field inspection relative to their energy efficiency codes. As most of the states are adopting the voluntary energy efficiency codes cited in the legislation, it has been cost effective for the Department to develop generic core materials that can then be tailored by each state to its needs.

Question: How do you decide which States to include in the program?

Answer: The Department considers all states part of the program. Technical assistance is provided to the level permitted by funding. Requests are evaluated as they are received. Incentive funding is provided on a competitive basis. Awards are based primarily on the technical merit of the proposals in responding to the legislative requirements. Other factors such as amount of cost sharing are also considered.

Federal Energy Management Program

Question: Funding for FEMP increased from $15.5 million in fiscal year 1994 to $23.5 million in FY 1995. How was the program changed with the increase you got this year?

Answer: The FY 1995 budget of $23.5 million is an increase of about $8 million over the FY 1994 request. The major increases from FY 1994 to FY 1995 are in the Federal Energy Efficiency Fund, an increase of $2.2 million; a $1.9 million increase in planning, reporting and evaluation; and $3.9 million in technical guidance and assistance.

Through the Federal Energy Efficiency Fund, grants are awarded to Federal agencies using criteria such as the cost-effectiveness, amount of energy and cost savings, the amount of funding committed by the agency, and the extent that the proposal leverages financing from non-Federal sources. There was a $2 million increase over the FY 1994 budget request. We have awarded 24 grants totalling $6.5 million. Savings from these grants is expected to exceed $22 million. Current returns from the Fund investment indicate that for each $1 spent for the Fund approximately $4 in energy savings is produced over the life of the project and more than $10 may be leveraged through private investment by energy service companies and utilities. The FY 1995 funding will continue to pay off by producing improvements to Federal buildings and saving taxpayers dollars.

With the significant increase in projects and programs resulting from the Energy Policy Act of 1992 (EPACT) and Executive Order 12902, planning, reporting and evaluation looks at existing programs to find the most effective and efficient, cost-saving projects and practices to transfer to others for implementation. EPACT and the Executive Order require greater analysis, therefore, energy efficiency products, water conservation, and life-cycle analysis data are assessed and validated to verify energy savings and environmental benefits. By finding ways of implementing programs, transferring their successes, overcoming barriers, and sharing with other agencies and the private sector, we anticipate greater acceptance of agency participation in a wide range of programs to increase energy and water efficiency in the Federal government. Also in FY 1995, FEMP launched a pilot Regional Energy Action Project, stationing two-member teams of experts in three regions (Seattle, Chicago and New York), to help Federal energy managers in the field implement efficiency improvements in their buildings and operations.

The budget increase in technical guidance and assistance provides additional training and delivery and provides for developing new training materials and improving existing courses. Also, there is a need for follow-up assistance to help agencies apply the lessons learned, e.g., hands-on assistance in developing energy savings performance contract projects. Excellent economic results are now available with good examples for the increased funding in support of energy savings performance contracts. The project at the Department of Energy headquarters resulted in high efficiency lighting and savings of over $1 million over the seven year life of the project. This was accomplished at no capital cost to the government due to a utility rebate and private sector investment. We have also developed a model solicitation and "How To" guide and offer considerable technical support to develop projects. We have also encouraged the incorporation of renewable energy technologies and energy efficient technologies into the design of new Federal buildings and major retrofits of existing Federal buildings. Funding has provided technical assistance to agencies, conducted workshops and is actively pursuing several projects with the Department of Defense; National Park Service, Fish and Wildlife Service; and the General Services Administration.

Question: You have requested $25.4 million for FEMP in fiscal year 1996. There are several increases and decreases which net to this $1.9 million increase. How do you propose to further change the program in fiscal year 1996?

Answer: FEMP's budget of $25.4 million is a good investment with demonstrated results. With a new way of doing business that includes partnerships and problem solving, the results can be significantly increased. FEMP uses several methods to help agencies find capital for their efficiency projects. By the end of 1995, FEMP will lead in the development of at least 25 energy saving performance contracts. In FY 1996, the program will increase the number of energy savings performance contracts by providing training, technical assistance and on-site audit support to agencies, with the goal of attracting $20 million in new private sector investments, building to over $1 billion in private sector investments by 2005.

As an example, additional funding will allow SAVEnergy Action audits at approximately 25 sites to help facility managers know the best energy cost reduction options. To move those audits into energy saving projects requires additional technical and financing support from FEMP. To get an energy savings performance contract for Ellis and Liberty Island National Parks, FEMP provided about 20 people days, helping the Park Service develop, issue and evaluate the solicitation.

Question: A total increase of $1,071,000 is proposed for planning, reporting and evaluation. What specifically would you do with those funds?

Answer: We will continue to take a closer look at projects and programs to find the most effective and efficient, cost-saving ones to transfer to others for implementation. We will also focus on outreach and communications which is critical to the success of the program. The most often cited need from facility managers is good information that will be disseminated by publications, electronic media and new methods such as televised conferences to multiple sites. Another example of funding in this category is the evaluation of results with quality metrics. Good measurement and verification methods will document results, leading to more and better projects. A related benefit is using the metering to diagnose on-going operation of the building which allows constant improvements of the buildings operating systems, thus saving even more money.

Question: An increase of $1,539,000 is requested for technical guidance and assistance for Federal agencies. What guidance and assistance do you provide now and how would that change with this increase in funding?

Answer: There is a need for the Federal Energy Management Program to provide more leadership and technical expertise in actually getting more projects completed. Although energy efficiency seems simple on the surface, it is really quite complicated. If it were easy, it would have been done by now. It is worth noting that the Federal government is no different from the private sector in this respect. In the Federal government, facility managers are not trained in energy efficiency, agency missions set higher priorities for limited funds and staff time, and there are difficult technical and financial issues to overcome.

Reducing energy use and realizing the resultant cost savings is a difficult job. That's true for the private sector as well as our Federal agencies. Most large companies with diverse facilities like ours have sophisticated energy management support. That's what our Federal Energy Management Program does.

What we have found is that the facility managers need help making decisions about technologies and funding option. In fact, both the utilities and energy service companies welcome our participation to help make projects happen. FEMP has developed strong partnerships with both for that very reason. Utilities like Southern California Edison and Consolidated Edison in New York and the National Association of Energy Service Companies recognize the importance of a strong Federal partner.

Perhaps the most important help we can provide with this increased funding is the technical and procurement requirements to obtain adequate project funding. There are several ways to fund energy savings projects. The very best circumstance would be adequate appropriations to complete all projects. That way the government keeps ALL the savings, but that is unlikely in today's budgetary environment. The second is to obtain all utility incentives possible. We are doing that with strong new initiatives with utilities but utility rebates are declining. The third way is to obtain private sector investment through energy savings performance contracts which share the savings with a company making the investment.

Critics charge energy savings performance contracts take too long and require considerable staff time. It is true they are not easy, but obtaining appropriated funds for large renovations is not easy either. In fact, we calculate an energy saving performance contract can be negotiated in a little over a year while capital improvement using appropriated funds may take three years. Two things are important to keep in mind: when faced with the decision to seek appropriations, agencies may decide to put energy efficiency at a lower priority than mission requirements; and delay means lost opportunity to reduce costs. We estimate every week we delay achieving the 20% energy reduction required by the Energy Policy Act costs the government almost $20 million -- that's $20 million A WEEK. An argument can be made it is expensive NOT to pursue energy savings performance contracts.

Question: How much longer do you think we should continue the FEMP program? At some point shouldn't the agencies assume this responsibility on their own? Please explain.

Answer: The sole reason to continue this program is to reduce the cost of government. It is difficult for agencies with different missions to focus resources on energy efficiency, especially in times of limited resources. FEMP stays focused on energy efficiency and will thus help other agencies achieve savings for the Federal government. Although we have made great progress, we have not realized anywhere near all of the potential to reduce Federal energy costs in the 500,000 buildings owned or operated by the Federal government. We have treated only a few thousand buildings so far and are just starting to do cost-effective mobile energy and water conservation projects. EPACT places year 2005 requirements on the Federal government which will not be met if FEMP's efforts diminish. FEMP has realized only a small percentage of the $1 billion of potential annual savings in energy costs anticipated by 2005. Cumulative cost avoidance would far exceed $10 billion by that time. It takes the ongoing involvement and expertise of FEMP to identify the most cost-effective energy efficiency improvements, leverage agency funds with utilities and private investors, and train energy managers to sustain the energy savings.

As you know, the Energy Policy Act of 1992 states agencies are responsible for implementing the provisions of the act and the Department of Energy provides assistance to them in accomplishing those actions. Let me give you several very specific examples of FEMP leadership and active involvement in development of projects.

EPACT created the Federal Energy Efficiency Fund to provide grants to agencies for efficiency projects. FEMP plans to award $8 million in grants during 1995 to stimulate better projects and leverage utility and private sector funds. During FY 1996, FEMP will award 100 to 150 grants, covering energy efficiency, renewable energy and water conservation projects in Federal facilities. Each $1 produces $4 in energy savings and may leverage more than $10 in private investment by energy service companies and utilities. Thus, the $8 million in FY 1995 funds would likely leverage $80 million in private investments, leading to $320 million in additional energy cost savings for taxpayers.

The same is true with energy savings performance contracts. Agencies need help establishing a baseline, developing and evaluating a solicitation and verifying savings. Many agencies look to FEMP for this type of support.

Utility incentives offer one source of project funding. With FEMP's leadership, as much as $400 million may be invested by local utilities. Utilities recognize they cannot be successful in reducing demand without FEMP's help. Over eighteen major utilities are active partners in the Federal Utility Partnership.

In 1995, FEMP launched a pilot Regional Energy Action Project, stationing two-member teams of experts in three regions (Seattle, Chicago, New York) to help Federal energy managers in the field implement efficiency improvements in their buildings and operations. This approach will complete 20 efficiency projects through these Regional teams in FY 1996.

FEMP is working with the White House Council on Environmental Quality and the Office of Management and Budget to issue a Federal Procurement Challenge -- a voluntary, government-wide commitment to simplify the problem faced by facility managers in selecting the most efficient and cost-effective technologies. In addition, the program will expand markets for energy efficient and water-conserving products; create new markets for high-efficiency technologies; and reduce energy use and greenhouse gas emissions. FEMP is partnering with the General Services Administration, the Department of Defense, the National Institute of Standards and Technology, and the Environmental Protection Agency in these endeavors.

Agencies look to FEMP to provide training and audits. FEMP will provide 75 training programs, serving 2,500 Federal energy managers from every major agency during the year. This will help expand the pool of technical expertise necessary to realize the significant cost savings opportunities available. FEMP will also complete SAVEnergy Action Plans at 500 Federal sites in response to overwhelming requests for energy audits by agencies.

Implementation and Deployment

Question: The implementation and deployment program is funded at $6,032,000 in the fiscal year 1996 budget request, as compared with $1,370,000 in fiscal year 1995. That's a 340% increase in funding. The increase is for 2 major new initiatives -- "Cool Communities" and "Training for Commercial Building Operators." Both of these initiatives are part of the climate change action plan. (budget p. 320, 321)

What is the difference between marketing commercially available products and what you do in your implementation and deployment program?

Answer: The Implementation and Deployment program disseminates information to customers to accelerate the adoption of program results from the Building Energy Research and Codes and Standards offices. The Climate Change Action Plan initiatives are in this program because of their primary focus on education and outreach. None of the activities in Implementation and Deployment include "marketing commercially available products." The activities funded by this program include:

- developing information materials on building technologies and DOE programs
- representing DOE at conferences and trade shows to educate the public and DOE stakeholders
- facilitating communication between DOE support offices, national labs and state and local government through workshops and conferences.
- implementing CCAP: "Building Operator Training" program
- implementing CCAP: "Cool Communities" program

Cool Communities

Question: How are the Forest Service, EPA and the Defense Department involved in the Cool Communities program?

Answer: A community of Federal agencies working together is needed to achieve program success. Other Federal agencies in addition to U.S. Forest Service, EPA, and DoD are involved. As lead advocate for Cool Communities, DOE helps identify Federal agency roles and motivates commitments needed for Federal agencies to support achieving program goals. Different agencies have unique mandates that provide a variety of support including research and development, technical assistance, financial assistance, training, economic development, facilities management, international outreach, and others. Specific roles are as follows.

U.S. Forest Service:

1) scientific research on energy efficiency and resource conservation aspects of community forestry, use of wood products in buildings, and biogenic emissions of carbon;

2) technical and financial assistance on urban forestry to States and local communities nationwide.

3) technical and financial support for urban forestry training and distribution of educational materials related to energy efficiency aspects of trees in the urban environment;

4) international outreach to assist developing countries understand and gain energy efficiency benefits from urban forestry; and

5) Federal facility demonstration sites where trees and cool surfaces can help improve energy efficiency.

EPA provides:

1) scientific research on air quality aspects of reducing urban heat islands using trees and cool surfaces, and assessment on impact of climate change due to greenhouse gas emissions;

2) Federal facility demonstration sites where trees and cool surfaces can be used to improve energy efficiency;

3) coordination of Cool Communities program with related environmental protection assistance to states and local communities through regional offices.

DoD provides:

1) Federal facility demonstration sites nationwide where trees and cool surfaces can be used to achieve energy efficiency for heating and cooling; and

2) test bed for controlled research, demonstration, and monitoring in military communities to implement educational outreach and market development for cool products and techniques in commercial, residential, and industrial applications.

Other Federal agencies having facilities and or programs that affect community buildings, pavements, landscaping, and community viability are either supporting or have potential to support Cool Communities. HUD, DOI, DOC, DOT, NASA, and other USDA agencies are expressing interest.

Question: How are cities selected to be a part of the program?

Answer: The National Cool Communities Advisory Committee selects communities and/or cities for designation. The Committee is chaired by American Forests, a private nonprofit conservation organization. Committee members are representatives from other private organizations and government agencies including DOE, EPA, American Association of Nurserymen, HUD, DOD, USDA Extension Service, USDA Forest Service, American Public Power Association, Edison Electric Institute, National Readi-Mix Concrete Association, Asphalt Roof Manufactures Association, and the American Portland Cement Alliance. The Committee applies agreed upon criteria that includes the level of interest from local utility companies; partnership commitments from building, pavement, and landscaping interests; commitment to monitoring energy savings and environmental changes; willingness to use the Cool Communities logo; potential for energy savings and environmental improvements; and other criteria. There are currently six cities and one Federal facility designated as model Cool Communities. They are Atlanta, GA; Springfield, IL; Austin, TX; Frederick, MD; Tucson, AZ; Miami, FL; and Davis Monthan Air Force Base. There are over thirty cities and Federal facilities that have expressed interest in being designated.

Question: What cost-sharing is involved?

Answer: In outreach, DOE funding to support a private organization that manages Cool Communities provides a unique opportunity for local private industry to contribute and invest in projects that achieve local community benefits. In past years, limited Federal outreach funding from EPA and DOE has been used as a catalyst to leverage additional support from local utilities, local landscaping industry, local community businesses, community groups, national corporate partners, international private business, and other government assistance. Cost-share has been about 7:1 in the designated model Cool Communities during the past two years where every Federal dollar brings in about seven from other sources. The intent is to leverage financial support, provide scientific and technology support, and educate and train the community marketplace.

In the research and development, Cool Communities encourages private industry to buy in on market transformation. Roofing manufacturers, coating manufacturers, the pavement industry, and the landscaping industry will all gain by developing a market for their "cool" products. Standardized testing, product efficiency rating, and labeling are part of this market transformation. Utility companies benefit and have been willing to invest in demand side reduction, carbon sequestration, and improved public relations resulting from their participation in Cool Communities. The Lawrence Berkeley Laboratory is initiating cooperative research and development agreements with private industry where both government and private funds are matched. Electric utility companies provide financial, educational, and monitoring support to the research and development phase of Cool Communities.

Question: What specifically would you do with the $2,190,000 requested for the cool communities program?

Answer: Available funds for Cool Communities would be coordinated with urban heat island research funding to extend our understanding of heat islands and develop techniques for use by local communities in mitigating them:

Cool product development includes developing standards for measuring reflectivity and emissivity of various products, developing energy efficiency performance labels, and preparing a data base of available cool materials.

Monitoring energy efficiency and environmental improvement gains resulting from using cool surfaces in combination with urban forestry techniques.

Expand the number of designated cool communities to at least 50 cities and 20 Federal facilities and provide educational outreach and market transformation support in each location by involving state energy offices and DOE regional support offices in implementing technology transfer.

Support the function of the National Cool Communities Advisory Committee that forms the basis for interagency cooperation with private associations in supporting Cool Communities. Coordination would cover both research and outreach aspects of Cool Communities Program and membership of the Committee would be expanded.

Training for Commercial Building Operators

Question: Why is the Department proposing to get involved in operation and maintenance training for commercial buildings operators?

Answer: The Department estimates that 15 percent of the energy consumed in commercial buildings could be reduced through more efficient operation of building systems - without major capital investment. DOE/industry workshops in the past year identified *building operator training* as the highest priority to reach the energy and cost savings potential. Organizations represented at workshops included Wal-Mart, Marriott, Kaiser, International Facilities Managers Association, Association of Higher Education Facilities Officers, US Postal Service and several large property management firms.

Although today's building operators have basic ability to operate building systems, many lack the knowledge, tools, or incentive to operate them at highest efficiency and lowest cost. For example, building operators often adjust the control of heating and cooling systems in reaction to occupant complaints. Control adjustment and other unscheduled system operation can dramatically increase the energy consumption and cost. With targeted training programs, operators can learn methods to anticipate problems before they develop so systems can be operated at lowest cost, but still meet the needs of the occupant. Training in efficient operation gives the operators the necessary tools to increase the building's efficiency while maintaining healthy, comfortable indoor environments.

Question: What specifically would you do with the money you have requested for this new program?

Answer: The Department will develop training curriculum and materials, conduct train-the-trainer seminars, update continuing education certification programs, create recognition programs, produce and disseminate publications on the best operation and maintenance practices, and develop operation and maintenance software for building operators. All activities will be cost-shared with national organizations and the private sector. The program direction will be driven by industry and done in cooperation with professional and trade organizations that already have training infrastructure in place. The program will cooperate with state energy offices and utilities to replicate successful training programs. Early in FY 1996, a workshop with be held with industry focused on building operator training to finalize the direction and content of the program, and to reach agreements of roles between DOE and partners.

Management and Planning

Question: An increase of $500,000 is requested for improving policy analysis of residential and commercial energy use. How would these funds be used? (budget p. 324)

Answer: The requested funds would be used to collect actual measurement data describing energy use in recently constructed and exemplary commercial and residential buildings. These data would be used to provide information for, and to validate inputs needed for three kinds of analyses: (1) those to meet requirements of the Government Performance and Results Act and the Reinventing Government Initiative; 2) supporting analyses required by the Energy Policy Act of 1992 and to meet U.S. obligations under the Framework Convention on Climate Change; and (3) analyses to provide quantitative predictions (Quality Metrics) of the program benefits that are then used in planning the most effective portfolio of building sector programs.

Industry Sector

Cogeneration

Question: Please explain what is meant by advanced topping cycles in the cogeneration program. (budget p. 343)

Answer: Cogeneration, by definition, is the concurrent production of two or more forms of energy from a single fuel source. For example, one of the most typical forms of cogeneration produces electricity and steam using natural gas. The topping cycle is that portion of the system which utilizes the fuel energy first, most often used to make electricity. The bottoming cycle then utilizes the remaining energy. When the Cogeneration program was first formed in 1978, the program had three elements: topping cycles, bottoming cycles and direct conversion devices. All present work is in topping cycles. In a combined cycle, which is a variation of cogeneration widely used by electric utilities, gas is burned in a gas turbine to turn a generator. The heat in the turbine engine exhaust is then used to raise steam, which is used in a steam turbine to turn a second generator. This system achieves efficiencies up to 85%.

Question: What is the status of the high performance steam turbine program and why is this program increasing from $1 million in fiscal year 1995 to $1.5 million in fiscal year 1996?

Answer: The fabrication of a 4 MW High Performance Steam Turbine prototype was completed and a factory test program was initiated. Some alterations are currently being made to the unit based on the results of these tests. Funds in FY 1995 will be used to complete the 100 hour factory testing of the 4 MW unit. $1.5 million has been requested in FY 1996 to install the entire HPS (steam turbine plus already fabricated heat recovery steam generator) system in a field test, which is heavily cost-shared with industry. Federal funding will be used for the installation and a 1000-hour monitoring period; the unit is designed for a thirty year life.

Question: What are the advantages of this technology and how is it different from currently available technology?

Answer: Present operating efficiency is restrained by the allowable temperature and pressure limitations of both boilers and steam turbines. Thermodynamically, increasing steam temperature and pressure will result in higher generating efficiency and increased power output. The HPSS can handle steam conditions of 1,500 pounds/square inch (psig) and 1,500°F. Increasing steam pressure and temperature from the standard industrial practice of 600 psig and 750°F to the conditions of the HPSS will more than double both power output and turbine efficiency. In comparison to state-of-the-art practice, with steam conditions of 950 psig and 900°F, the HPSS will increase conversion efficiency by 53% and produce 22% more electricity for the same steam flow.

Question: What are the outyear costs associated with the high performance steam turbine?

Answer: To complete the final element of the program, which is the field test, $1.5 million is requested in FY 1996 and $.4 million will be required in FY 1997. The cost share by others will be approximately $5.5 million of the estimated $7.4 million cost for the field test.

Question: The budget for ceramic component design and engine testing of components increases from $7.5 million in fiscal year 1995 to $9.1 million in fiscal year 1996. What are you doing in 1995 and why is the additional funding required in 1996? (budget p. 344)

Answer: The objective of this project is to develop ceramic components for existing industrial gas turbines. These components, which can be retrofitted during normal turbine overhauls as well as in new turbines, will improve efficiency by 16 percent, electrical output by about 33 percent and reduce emissions by up to 90 percent, compared to conventional equipment. Work in fiscal years 1995 and 1996 constitutes the major portion of work in this project. During FY 1995, ceramic blade, nozzle, combustor liner designs will be completed along with design modifications to the engine necessary to accommodate the new components. The engine test apparatus will be completed and the testing of five subcontractor materials will be initiated. Complete first generation component evaluation and testing, and short-term material life database generation. Test results will be used to modify components as needed; second generation blades, nozzles, and combustor will undergo testing. A plan for the 4000 hour field test will be developed.

In fiscal year 1996, design and testing will be completed on second generation components. Five full-scale engine test programs, each with different components, will be completed. Testing for a database of properties for five ceramic materials will be completed. Arrangements for a field test site will be completed, and host site modifications for final demonstration will begin.

Advanced Gas Turbines

Question: What is the advanced gas turbine program and how does this technology differ from other turbines?

Answer: The Advanced Turbine Systems (ATS) Program will develop more efficient gas turbine systems for both utility and industrial electric power generation, including cogeneration. The program is an eight year, $700 million effort jointly funded by DOE and industry. This program was developed in response to the Energy Policy Act of 1992, Section 2112. An updated report entitled *"Comprehensive Program Plan for Advanced Turbine Systems"* was sent to Congress in February, 1994. The goal of the program is to design, develop and demonstrate the next generation of land-based turbine systems that will be more efficient, environmentally superior, and produce electricity costing 10 percent less at the busbar. Turbine components will be designed with the latest computer techniques and fabricated using advanced materials technologies such as ceramics and coatings. These components will be integrated into the latest system concepts using elements such as compressor intercooling, recuperation and steam cooling. Some of this technology is being adapted from advanced military aero-engine designs.

Question: Describe the joint program you have with fossil energy to develop advanced gas turbines; what is the division of funding and work between EE and FE (budget p. 345)

Answer: Within DOE, leadership of the Advanced Turbine Systems Program is shared between FE and EE. FE has prime responsibility for the utility size turbine development, the University/Industry support activities and future adaptability to coal derived fuels. EE has prime responsibility for the industrial size turbine development, materials support activities and future adaptability to biomass-fueled systems. Management of the program is coordinated with the Environmental Protection Agency, the Electric Power Research Institute, the Gas Research Institute, gas turbine manufacturers, the Department of Defense, and others.

Question: Why does funding in your budget for advanced gas turbines increase from $9,654,000 in fiscal year 1995 to $16,340,000 in fiscal year 1996?

Answer: Fiscal year 1995 is the first year of a five year funding plan which supports the main elements of the ATS Program as it enters Phase III. The first two phases were scoping studies and detailed engineering studies. Phase IV is the demonstration phase. The largest portion of Phase III is the design and development of the core ATS engine. This effort involves tens of thousands of man-hours to design, built, test, optimize and integrate the engine components and subsystems. The second largest element is the development of materials technology, namely thermal barrier coatings (TBCs) and single-crystal turbine blade casting. These programs involve, in part, the adaptation of military, aero-engine technology to land-based engines, and are crucial enabling technologies for high efficiency engines.

Question: What will it cost from start to finish for the advanced gas turbine program? How much of that will be funded in your budget and how much will be in the fossil energy budget?

Answer: The ATS program plans has estimated a total program cost of $706.6 million. Of that amount, the plan calls for DOE to fund $470.2 million; industry will cost-share the balance of $236.4 million, or 33.4%. Energy Efficiency and Renewable Energy will provide $166.1 million and Fossil Energy will provide $304.1 million.

Question: When will the program be completed?

Answer: Most of the program is meeting planned milestones and on schedule to be completed in 2001. The one area where slippage has occurred in the most recent round of procurements which is due in part to resolution of EPAct 2306 issues pertaining to limits on participants by non-domestic based companies. All awards must now go through a 2306 determination to establish the degree of foreign participation.

Question: To what extent could you stretch out this program?

Answer: A constraint of funding would have a severe effect on the program. A severe funding reduction, say to FY 1995 levels, would extend the length of the program from seven years to more than 15 years, and would certainly have a devastating effect on the quality and timing of the project. The current funding is based upon the organization of more than a dozen teams that would work on the engine subsystems and the integration of the engine system. A cut in funding would result in the loss of personnel to other funded projects, which will dilute the quality of the work. While the development of biomass applications could be delayed, work on materials and combustor work are timed to be integrated into the core engine development work. These enabling technologies are critical if the program goals are to be met.

Question: For the record, please provide a year by year analysis of the work required for the life of the advanced gas turbine program, including past expenditures and separate estimates by year of FE and EE funding.

Answer: The funding plan is shown in the attached table.

The major elements of the program are as follows:

Program Element I
Phase I: Planning studies (1992 - 1993): Six gas turbine manufacturers perform scoping studies to identify incentives and define technical issues and resource requirements for advanced gas turbine systems
Phase II: Concept development (1993- 1995) Five gas turbine manufacturers develop conceptual designs of advanced turbine systems. Detailed designs of critical components are completed. Technical, economic, and environmental performance are assessed.

Program Element II - Utility System Development
Phase III: Component Design and Testing (1995 - 1997) Critical components will be tested. Subscale assemblies will be evaluated, including hot rig testing. A final design of the major gas turbine components will be generated.
Full-Scale Component and Integrated Subsystem Testing (1996 - 1998) Tests will be conducted on full-scale components and integrated subsystems; changes will be made prior to the field test.
Phase IV: Utility System Demonstration (1998 - 2000) A full scale ATS will be operated in a utility environment for 8000 hours.

Program Element III - Industrial System Development
Ceramic Retrofit Engine Demonstration (1992 - 1998) Ceramic combustors, blades and nozzles will be produced and evaluated in test rigs, full-scale engine tests at the factory, and finally, in a 4000 hour field test.
Phase III: Component Design and Testing (1994 - 1997) Critical components will be tested. Subscale assemblies will be evaluated, including hot rig testing. A final design of the major gas turbine components will be generated.
Full-Scale Component and Integrated Subsystem Testing (1997 - 1998) Tests will be conducted on full-scale components and integrated subsystems; changes will be made prior to the field test.
Phase IV: Industrial System Demonstration (1998 - 2000) A full scale ATS will be operated in an industrial environment for 8000 hours.

Program Element IV - Technology Base Development
Industry/University Consortium (1992 - 2000) Much of the basic R&D needed in this program will be performed by a consortium managed in cooperation with the South Carolina Energy Research and Development Center. Industrial co-sponsors

will identify critical technology needs. Twenty-three contracts have been awarded to date. Fifty-three universities have joined the consortium along with five major turbine manufacturers.

Materials/Manufacturing Technology (1992-2000) This element will address the critical materials and manufacturing technology issues for both the utility and industrial programs. Contracts will be awarded for single crystal casting of turbine blades and the development of thermal barrier coatings.

Morgantown Energy Technology Center In-house Studies (1992 - 2000) METC's R&D organization will conduct relevant combustion and turbine operation studies in its recently completed center for turbine studies.

Coal Applications (1994 - 2000) This program will consider changes to ATS engines that may be required when operating on coal-derived fuels, most likely involving coal gasification.

Biomass Applications (1997 - 2000) This element will develop the required modifications to ATS turbines so that they may operate in an biomass integrated gasifier/combined cycle (IGCC) system.

Advanced Turbine Systems Program Funding

	DOE	Fiscal Year Funding in $ millions									DOE Total	Cost Share	Total Cost	Cost Share
		1992	1993	1994	1995	1996	1997	1998	1999	2000				
I. Innovative Cycle Development														
Concept Definition	FE	0.3	5.8	12.0	2.0						20.1	6.7	26.8	25.0%
II. Utility System Development & Demonstration														
Component Development	FE				31.1	40.0	40.0	16.1			127.2	68.5	195.7	35.0%
Demonstration	FE							30.0	22.4	17.1	69.5	69.5	139.0	50.0%
III. Industrial System Development & Demonstration														
Ceramic Retrofit Test	EE	2.2	2.5	4.1	7.5	9.1	3.9	1.0			30.3	12.9	43.2	29.9%
Component Development	EE			2.7	8.3	15.7	19.8	18.0			64.5	34.7	99.2	35.0%
Demonstration	EE							5.5	15.0	13.8	34.3	34.3	68.6	50.0%
IV. Technology Base Development														
Ind/Univ. Consortium	FE	0.4	2.0	4.0	4.7	5.0	5.0	5.0	5.3	5.0	36.4	1.0	37.4	2.7%
Materials	EE		0.5	0.5	3.5	5.0	5.5	5.5	5.5	5.0	31.0	3.4	34.4	9.9%
Manufacturing Technology	FE			1.0	1.5	2.0	2.0	2.0	2.0	2.0	12.5	0.0	12.5	0.0%
Combustion	FE		1.0	0.3	0.5	0.5	0.5	0.5	0.5	0.5	4.3	0.5	4.8	10.4%
METC (In-house)	FE		1.0	2.4	2.6	3.0	3.0	3.0	3.0	3.1	21.1	0.0	21.1	0.0%
Coal Applications	FE			1.0	2.0	2.0	2.0	2.0	2.0	2.0	13.0	4.3	17.3	24.9%
Biomass Applications	EE				0.5	1.0	1.0	1.0	1.0	1.5	6.0	0.6	6.6	9.1%
Summary		**2.9**	**12.8**	**28.0**	**64.2**	**83.3**	**82.7**	**89.6**	**56.7**	**50.0**	**470.2**	**236.4**	**706.6**	**33.5%**

FE	0.7	9.8	20.7	44.4	52.5	52.5	58.6	35.2	29.7	304.1	150.5	454.6	33.1%
EE	2.2	3.0	7.3	19.8	30.8	30.2	31.0	21.5	20.3	166.1	85.9	252.0	34.1%

Continuous Fiber Ceramic Composites

Question: A reduction of over $2 million is proposed for work with industry on ceramic composites. What projects will be affected by this reduction and how will they be downsized in fiscal year 1996?

Answer: A reduction in fiscal year 1996 will affect all seven projects/industrial partners participating in the program (AlliedSignal, Amercom, Babcock and Wilcox, Dow Corning, DuPont Lanxide Composites, General Electric, and Textron Specialty Materials). The projects will be stretched out farther into the future. The downsizing for fiscal year 1996 will be achieved by lengthening the time period of the research and development stages needed to reach commercialization.

Question: What industry cooperators or contracts are affected by this reduction, how are they affected, and what would it cost to continue each of these projects on schedule in fiscal year 1996?

Answer: All of the projects would be affected by a fiscal year 1996 reduction; the projects and industrial teams that would be most affected are those that have the longest research and development schedule. The industrial teams that would be most severely affected by a fiscal year 1996 reduction are the Babcock & Wilcox Co. team (Babcock & Wilcox, Fiber Materials Inc., Ohio State University, and Virginia Polytechnic Institute and State University), the Dow Corning Corp. team (Dow Corning, Kaiser Aerotech, Solar Turbines, Sundstrand Fluid Handling, and Synterials), and the General Electric Corp. team (General Electric, Carborondum, Textron Specialty Materials and Oak Ridge National Laboratory). The funding reduction would cause insufficient funding for the full agenda of research and therefore, the research schedule would have to be extended. An additional $2 million will allow the teams to continue at the planned level of research.

Motor Challenge

Question: What are you doing this year with the $3 million provided for the Motor Challenge program?

Answer: The $3 million of funds will be used for support of the Motor Challenge program Showcase Demonstration projects, Partnership activities and the development of an Electric Motor Systems Database. [An additional $1.5 million will be used for the Motor Challenge Market Transformation activities and initiatives (formerly called Golden Carrot) - see subsequent questions.

The majority of Motor Challenge resources ($2 million) are to support activities within the Showcase Demonstration projects. [The intent of the Showcase Demonstration projects are to illustrate that energy savings can be captured cost-effectively by using a systems approach in the design and implementation of a variety of motor-driven system technical applications in varied end-use settings]. DOE intends to use the successful results of the Showcase Demonstration projects to encourage other companies with similar applications to follow suit. DOE funds will not in any way be used to subsidize the capital expense of any project. Federal funds will be used for Showcase Demonstration team support and technical assistance such as: providing the teams access to industry experts, developing tools and protocols that assist teams to implement projects, and holding workshops so that project teams may discuss common implementation challenges and opportunities with other industry teams. DOE will also pay for an independent performance validation (third party assessment) and the development and dissemination of case studies for each successful project. DOE is funding the cross-cutting technical assistance and facilitation of the projects, while industry funds the capital expense of their respective projects. To date the Motor Challenge program has received over 20 proposals from industry to participate in the Showcase Demonstration projects. Industry aggregate investment is estimated conservatively at $10 million. Projects will be announced by May once an agreement is signed between DOE and each selected team.

The remaining approximately $1 million of funds will be used for continued support of the Motor Challenge Partnership activities such as: the Motor Challenge Information Clearinghouse, communications support and co-sponsorship of regional collaboratives and workshops. Also, funds will be used to develop a National Electric Motor System Database. The Clearinghouse activity has experienced rapid growth corresponding to the increasing number of Motor Challenge partners, now in excess of 500 partners. Since the Clearinghouse opened last February, over 1600 calls have been received. More than 300 calls and requests were made in March alone. Motor Challenge funds were used to support the production of a Teleconference that is projected to reach over 5,000 viewers on May 23. Finally, funds are being used for the development of the Database which is the key mechanism for the Program's Partners to document energy savings and emission reductions and be recognized for their achievement. Showcase Demonstration projects will be the first to report to the Database.

Question: What is the purpose of this program and why is the Federal government involved?

Answer: The national energy savings opportunities of more efficient industrial motor-driven systems are enormous. Motor systems consume nearly 70% of all electricity used in industry. Industrial motor systems account for 8 percent of the Nation's primary energy consumption. The potential energy savings are 240 billion kilowatt-hours per year of electricity by the year 2010 - valued at $13 billion.

Motor Challenge was conceived and developed as a result of significant input from U.S. industry since 1992. Industry worked with DOE to identify the barriers which are impeding industry from adopting efficient motor systems in an accelerated and expanded manner. Similarly, industry suggested a variety of activities that DOE should either facilitate, and/or directly support and manage (see DOE 1993 Round table report). Accordingly, the purpose of the Motor Challenge program is to address barriers and opportunities through stakeholder initiatives in partnership with industrial end-users, motor and drive manufacturers, original equipment manufacturers (e.g., pumps, fans and compressors), distributors, utilities, and others involved directly or which influence the motor-driven systems market. By necessity, activities within the Motor Challenge are commonly focused on market relationships that don't naturally result from prevailing incentives in the marketplace. By acting in a facilitation role, DOE is improving the quality and dissemination of information, providing recognition of efficient motor-driven systems in various end-user settings, and helping to remove obstacles to enable the more rapid adoption of systems components and strategies.

One very important suggestion made by industry was for DOE to collaborate with market participants in the development of information, design-decision tools and best practices that would assist and benefit the broad spectrum of industry practitioners. This suggestion addressed the very significant and pervasive barrier throughout industry of a lack of information and the "know-how" in properly designing, implementing and optimizing motor systems. The Showcase Demonstrations will serve as a mechanism to prototype and validate the tools developed by DOE.

DOE's participation with industry is catalyzing market investment of opportunities that traditionally would receive less attention and priority by corporations. This situation has been clearly shown in the Showcase Demonstration projects where $2 million of FY 1995 Federal/DOE funds have spurred industry proposals valued at over $10 million. Likewise, DOE's sponsorship of a Teleconference on Efficient Motor Systems in May has already attracted 150 downlink sites involving almost every State in the U.S. The teleconference will broadcast nationally with an expected viewer participation of more than 5,000 and will focus on the needs of plant personnel in identifying efficiency opportunities. Because the teleconference will be interactive, participants will be able to call in questions, and also express their viewpoints on the issues at hand.

In summary, DOE's leadership provides a heightened awareness to the benefits of using efficient electric motor systems. A relatively small federal investment is being highly leveraged with the private sector to yield a large national return.

Question: How do you propose to expand the program in fiscal year 1996? An 88% increase in funding is requested -- $5,648,000 in '96 as compared with $3,000,000 in '95.

Answer: The increase is necessary to sustain the building momentum and participation within the Motor Challenge and the expansion of the scope of the Program. By the beginning of FY 1996 over 1,000 Motor Challenge Partners are estimated. Activities within Motor Challenge that will require a significant increase in the FY 1996 funding over FY 1995 include:

- Continued and expanded support for the Showcase Demonstration teams to include technical assistance, tool and best practice development, independent performance validations, and case study development. With as many as 20 Showcase Demonstration projects, the Motor Challenge will help industry achieve as much as 100 million kilowatt-hours per year of electricity savings or about $5 million.
- Initiation of the Motor Challenge Excellence Partner program where companies are recognized for their excellence and leadership in the way in which their motor systems are managed, including practices involved with the design, specification, purchase, implementation and maintenance of efficient motor systems.

- Expansion of the regional collaboratives from 1 to 4. Currently, the Midwest Motor Systems Consortium has engaged market stakeholders in over 10 midwestern States to collaborate on initiatives (e.g., training) that assist end-users in implementing efficient motor systems.

- Expanded technical assistance and support to the rapidly growing number of Motor Challenge Partners. Partners will be supported by the Program to help arrange for regional workshops and in communicating to end-users about the resources available through the Motor Challenge.

- Expanded technical assistance and information dissemination through the Information Clearinghouse. Up to 5,000 calls to the Motor Challenge Information Clearinghouse will be serviced to provide Partners with information, technical assistance and perform library research.

- The initiation of reporting by industry to the Electric Motor Systems database and "Savings Tracker". Current industry interest indicates that once the Database is prototyped within the Showcase Demonstrations, up to 100 plants will report their savings in FY 1996.

Golden Carrot

Question: How is the golden carrot program different from the Motor Challenge program?

Answer: As outlined in the FY 1995 Motor Challenge Program Plan for CCAP Actions #12 and #13 (dated December 30, 1994), market transformation strategies (formerly called Golden Carrot) are a sub-element of the entire Motor Challenge Program (the Partnership, Database, Clearinghouse and Showcase Demonstrations are the other elements). Correspondingly, the FY 1995 budget refers to market transformation strategies as the replacement for the Golden Carrot program, and is part of the overall Motor Challenge program, but is a separate line item in the budget.

Motor Challenge market transformation strategies are market-based initiatives that aim to increase and accelerate the use of more efficient motor-driven pump, fan, and air compressor systems. Market transformation strategies are intended to integrate and coordinate other activities supported under Motor Challenge (such as the design-decision tools and best practices developed and validated within the Showcase Demonstrations, the Database, the regional collaboratives and the Information Clearinghouse), to enhance the market-pull for efficient motor-driven systems. Based on preliminary market research and the results of a recent 1-1/2 day Roundtable with industry and end-users, initiatives will be developed and implemented that target specific energy savings opportunities and market segments (e.g., air compressor systems). The initiatives will focus on removing/reducing market barriers identified by industry which currently inhibit end-users from specifying, selecting, installing, operating, and maintaining efficient motor-driven systems. In addition, market transformation initiatives will be designed to encourage end-users to demand more efficient motor-driven systems and thereby accelerate the availability of such systems. DOE will work closely with end-users, applicable manufacturers and industry stakeholder groups such as Hydraulic Institute (HI, pump manufacturers), the Compressed Air and Gas Institute (CAGI, compressor manufacturers), the Air Movement and Control

Association (AMCA, fan/blower manufacturers), the National Electrical Manufacturers Association (NEMA, motor manufacturers), and the Electrical Apparatus Service Association (EASA, motor repairers and rewinders) in the planning, development and deployment of market transformation initiatives.

Question: What specifically are you doing with the $1.5 million provided in fiscal year 1995 for the golden carrot program?

Answer: Activities supported in FY 1995 have focused on planning for, and the development of market-based initiatives that will encourage increased use of more efficient motor-driven equipment. Specifically, this year market research is being performed on targeted market segments to better understand market delivery systems and how they can be influenced to encourage wider adoption of more efficient systems by end-users.

Planning and stakeholder activities include sponsoring and conducting a Motor Challenge Market Transformation Roundtable in April - a crucial event to the development of a series of market transformation strategies. The DOE Round table meeting will gather over 50 industry participants to suggest new approaches and market-based initiatives that will increase demand for new types of products and services of more efficient electric motor-driven system equipment, such as pumps, fan, and compressors.

To leverage with electric utilities, the Motor Challenge is also supporting the activities of the Consortium for Energy Efficiency (CEE) - Motor System Committee. DOE will work with CEE to form complementary strategies for implementing a number of demand-pull initiatives. Possible areas to be targeted include the development of voluntary equipment specifications, test procedures, uniform performance guidelines, and information and decision tools to assist end-users to design, specify and implement motor-driven equipment in a more informed and efficient manner.

Some market transformation strategies developed will require enabling activities to achieve desired results. A currently supported enabling activity includes the development and deployment of a training curriculum that will cover the broad spectrum of motor systems management, and also, more focused areas for application of adjustable speed drives and implementation of the performance optimization of pump, fan and blower systems. Another enabling activity involves the development of the Motor Master Plus computer software (which is an enhancement of the existing Motor Master software which contains a database of over 10,000 motors that are on the market). This decision analysis software will help plant engineers survey and inventory the range of motors in their facility so that they may identify the most cost-effective motor replacements.

Question: The fiscal year budget proposes an increase of 53% in funding for the golden carrot program, for a total funding of $2.3 million. Why is such a large increase needed?

Answer: Based on the results and input of the industry Roundtable, DOE will develop an action plan for a series of market transformation initiatives that will be rolled out in FY 1996. Therefore, increased funding is required to expand, accelerate and deploy the initiatives and market transformation strategies that were planned in FY 1995. DOE plans to continue working jointly with, and supporting the Consortium for Energy Efficiency.

Motor Challenge plans to deploy 50-60 training courses with its industrial partners which will again highlight the tremendous opportunities that industry may capture through proper management of their electric motor systems.

DOE also plans to work with the Electrical Apparatus Service Association (EASA) to develop a program that will help end-users better identify and demand quality workmanship and services from motor repair and rewind shops. EASA has solicited DOE's help in this area.

DOE also will continue support for the development of the enhanced Motor Master Plus software and then subsequent registration and distribution of up to 5,000 copies of the software to Motor Challenge Partners. Use of this software is of great benefit to industry since it aids in the decision-making process in the management of electric motors throughout an entire industrial facility. Similar tools may be developed to support decision-making for the purchase of officient fans, pumps, and air compressor systems.

Industry Sector/Process Heating & Cooling

Process Heating and Cooling is one of the rare programs in the energy conservation budget where funding is proposed for a decrease ($7,814,000 in FY 1995 and $4,588,000 requested for FY 1996 -- budget p. 354)

Question: You have proposed to discontinue funding for several projects in combustion equipment, heat pumps, and thermal science in the process heating and cooling program. Why were these determined to be of lower priority?

Answer: In the Industrial Combustion Equipment area, the four Very Low Emission projects are not of low priority at all. Indeed, industry needs the low cost, very low emission combustion systems now being developed if the expansion of industrial America is to continue. However, getting these projects in place required more time than was originally planned, and the prior year funds which are now obligated can be stretched to the end of FY '96. Significant funding will, of course, be required in FY '97. Also in the Industrial Combustion Equipment area, the improved heat transfer and control activity will begin in late FY '95 and can continue throughout FY '96 without any additional funding. Here too, additional funding may be required in FY '97.

The industrial heat pump projects were mature and have reached the logical conclusion of being closed out. Due to shifting priorities for OIT no further projects in this area have been undertaken. However, it is possible in the future that a particular industry (Pulp and Paper, Chemical, Refining) may have an interest in further industrial heat pump research and development. These projects would then be funded under the Industry Visions of the Future programs.

Question: To what extent do these projects involve industry cooperators?

Answer: The four Very Low Emissions projects are being conducted entirely by industrial organizations representing a broad cross section of American business, both large and small. The four projects and their "DOE partners" are:

I. Radiation Stabilized Distributed Flux Burner.
   Prime: Alzeta Corp.
   Sub: Babcock & Wilcox
   Host: Chevron, petroleum refining

2. Dilute Oxygen Combustion System.
   Prime: Praxair, Inc.
   Sub: North American Manufacturing Co.
   Sub: Reaction Engineering International
   Host: steel industry

3. Forced Internal Recirculation Burner
   Prime: Institute of Gas Technology
   Sub: Tampella Power Corp.
   Host: pulp and paper industry

4. Internal Vortex Staged Return-Flow Burner.
   Prime: Riley Stoker Corp.
   Sub: Thermo Power Corp
   Sub: Reaction Engineering International
   Host: chemical industry

All heat transfer and control activities are expected to be undertaken by industrial companies. The high-lift chemical industrial heat pump projects involve R&D organizations, heat pump manufacturers and industrial end-users.

Question: Are any of these projects being eliminated? If so, which ones and why? If not, what do you propose to do in the outyears?

Answer: It is not planned to eliminate any of the four Very Low Emission projects because of the importance of the combustion systems being developed to American industry. As noted above it is planned to request FY '97 funding for these projects. Similarly, no heat transfer/control activities are expected to be eliminated. Here too, FY '97 funding will be required.

None of the industrial heat pump projects are being eliminated. In anticipation of defunding, the scope of the projects had been scaled back in FY 1995. The high-lift chemical heat pump projects was reduced to two Phase II projects and one Phase III project (The original plan was for three Phase II projects and two Phase III projects).

Question: For the record please provide a brief description of each of the projects you propose to defund, along with an explanation of what it would cost to continue each of these projects on schedule in fiscal year 1996, the names of the industry cooperators and/or contractors, and what you would have done if the projects had been continued on schedule.

The NICE^3 program targets new and novel applications of technology and/or new techniques based on a breadth of criteria related to both energy and the environment. NICE^3 requires private investment rather than relying solely on taxpayers to bear all costs. Part of obtaining a NICE^3 grant requires serious financial commitment to a substantial state and industry investment. At least half the costs of the project (typically lasting 2 to 3 years) must be paid by nonfederal participants. Since 1991, nonfederal participants in NICE^3 typically invest $5.50 per federal dollar, the average for 29 projects in 17 states (completed or underway).

Federal funds are needed to catalyze industry activity in the area of energy, environmental, and economic improvements. The evidence is that the program catalyzes as many results as it directly funds. Similar industry-driven programs such as the DOW's Energy/WRAP program in Louisiana find that many of the innovative ideas, even ones with payback of thousands of percent annually, which are submitted for corporate funding are ideas that could have been implemented several years prior, but the inertia against change is able to prevent even good, economically sound ideas from being implemented. Without federal activity in this area, private investments in pollution prevention/energy efficiency will be much slower, and the national cost of energy and waste loadings will not be reduced nearly as fast.

The demand for this program is substantially in excess of the supply of funding. In FY 1995, 164 proposals, requesting $47 million in federal funding were received. Only thirteen (possibly fourteen) awards will be made. Clearly there is a case for increasing the funding for this program, whose goals match the mission of several federal agencies and improves the ability of state agencies to collaborate with industries throughout the states.

Question: How high a priority is the NICE^3 program, among all the programs which compromise the climate change action plan?

Answer: The NICE^3 program is as high a priority as any of the other programs comprising the climate change action plan. To my knowledge, no priority has been assigned for one program over another program. All of these programs produce very large benefits.

Question: What are you doing in the area of waste reduction technology in fiscal year 1995?

Answer: The waste reduction program has 23 active projects. All are developing new technologies wanted and supported by industry that will reduce waste and increase process efficiency while improving industrial competitiveness. Examples include recycling of electric arc furnace dust, reducing electroplating wastes, and reducing pulp mill wastes.

Question: Why is funding for waste reduction technology increasing to $2 million in fiscal year 1996, as compared with $863,000 in fiscal year 1995? Please provide project by project details for the record.

Answer: No Very Low Emission or improved heat transfer/control projects will be defunded. High-lift chemical heat pump projects are focusing on improving the economics and reliability of heat pumping. Had it been determined that industrial heat pumps were a priority for OIT the original plan for three Phase II projects and two Phase III projects would have been carried out. It would cost $1 million to fund these projects. Names of industry cooperators:

- Acurex Environmental Corporation (Mountainview, CA)with Frick Company/York International Corporation
- Energy Concepts Co. (Annapolis, MD)
- Rocky Research (Boulder City, CO)
- University of Maryland

Industrial Waste

Waste Reduction

Funding for waste reduction program is proposed to increase from $16,360,000 in fiscal year 1995 to $17,876,000 in fiscal year 1996. That's a 9% increase. There are a couple of large decreases which partially offset the proposed increases. (Budget p. 366-369)

Question: You seem to be changing emphasis in the waste reduction program by downsizing some of your current efforts and expanding other efforts. Please explain your rational for those projects you plan to reduce.

Answer: The waste reduction program continues to maintain its emphasis on waste reduction and energy efficiency improvements through industrial supported R&D. In the first key activity the budget request was reduced from $3.2 million to $2.1 million because 3 projects will be completed and further funding is not required. The projects are superior asphalt recycling, novel selective surface flow membranes, and biological/chemical caprolactum production. The second key activity budget request was reduced from $2.5 million to $1.0 million because 2 projects will be completed and further funding is not required. The projects are electroplating waste minimization and supercritical parts cleaning.

Question: What is the NICE^3 program, and why do you propose to increase funding for the program from $3 million in fiscal year 1995 to $5.5 million in fiscal year 1996?

Answer: NICE^3 is a cost-sharing grant program (of the U.S. Department of Energy and the U.S. Environmental Protection Agency), entering its sixth year of solicitation in FY 1996. The goals of NICE^3 are to advance industrial competitiveness through energy efficiency, waste reduction, and cleaner production. It has helped industries and states bring forward new technological advances. It extends across the mission of several federal agencies and improves the ability of state agencies to collaborate with industries throughout the states.

Answer: Funding for waste reduction technology is increasing to $2 million in fiscal year 1996, as compared to $863,000 in fiscal year 1995 to support two collaborative research projects with two nationally recognized industrial consortiums: The American Institute of Chemical Engineers Center for Waste Reduction Technology (CWRT) and the National Center for Manufacturing Sciences (NCMS). These two partnerships enable the Office of Industrial Technologies, in the context of its mission, to support critical high-risk/longer-term waste minimization R&D that would not be pursued by industry alone. The research priorities are industry-driven and the collaborative arrangement provides excellent leveraging (greater than 60% industry cost sharing) of federal dollars. Since the collaborative projects are conducted with industry consortiums, the R&D activities benefit multiple companies and are applied industry-wide.

The CWRT is a not-for-profit organization dedicated to reducing waste by the chemical industry, customers and suppliers. The member companies determine and fund the critical R&D needed to achieve the goals of cost effective waste reduction through technology development.

NCMS is the nation's largest manufacturing consortium with over 200 member companies representing approximately 20% of the domestic manufacturing employment. NCMS and it's industrial sponsors recognize the strong industrial tie between industrial competitiveness, energy efficiency and waste maximization. The member companies determine and fund the critical R&D needed to achieve the goals of cost effective waste reduction through technology development.

Waste Reduction Project Activity FY 1994-1996

Project Title	FY 1994 Activity	FY 1995 Activity	FY 1996 Activity
Hydrogen Sulfide Utilization	Complete laboratory test of disassociation technology	Terminate hydrogen sulfide research and generate final report.	
Silicon Oxide Utilization	Complete testing of 6-MW closed-furnace pilot plant. Make commercialization decision		
High Pressure Membranes	Complete industrial field tests of high-pressure membranes. *Commercialize the technology*	Transfer technology to additional industries	
Superior Asphalt Recycling	Start asphalt recycle tests	Finish screening tests for asphalt recycling agents	Complete expanded aging tests of recycled material to improve life expectancy and performance of recycled asphalt
Novel Selective Surface Flow Membranes	Selective flow membrane go/no-go decision for Phase I scale up	Start system design optimization for selective flow membranes	Conduct prototype design and construction of selective flow membranes to recover hydrogen from waste gas streams
Biologiral/ Chemical Caprolactam	Biological caprolactam (a precursor to Nylon-6) production to complete organism selection	Complete the isolation of optimized micro-organisms	Perform engineering scale production demonstration to verify cost, energy and waste savings
Amine Scrubbing Solutions		Complete development of new data for more efficient operation of acid gas amine systems	Complete data base development for more efficient operation of acid gas amine systems
Recycling of Carpet Materials			Design and develop a bench scale process to recover valuable caprolactam from waste nylon-6 carpet
Electric Arc Dust Furnace		Award and start project	Carry out small scale demonstration of several methods to control, reduce and recover the dust from electric arc furnaces
Scale up and Demonstration of Chrome Plating Bath Purification Cell		Award and start project	Start installation, testing and analysis of pilot scale test cell for the regeneration of chrome plating solutions
Supercritical Parts Cleaning	Initiate scale up of supercritical fluids part cleaning to eliminate CFC usage and reduce VOC emissions associated with electronics assembly and metal parts cleaning	Perform supercritical fluids parts commercial cleaning demonstrations. *Begin commercialization of technology*	Transfer supercritical fluids parts cleaning technology to additional users
CO_2 Dry Cleaning			Demonstrate supercritical carbon dioxide cleaning for clothes cleaning
Membrane Vapor Recovery		Select industrial test sites for testing membranes for VOC removal from waste gas streams	Complete testing at industrial test sites of membranes to remove VOCs from industrial waste gas streams. Disseminate technical and economic data to potential users

Petroleum Industry Solicitation (projects listed below)	Select top five proposals (listed below) from solicitation award contracts and start projects	Solicitation completed. Projects started in FY 94	
Develop Pervaporation Technology	Award and start project	Demonstrate pervaporation technology to recover and reuse Volatile Organic Compounds from industrial waste streams	
Advanced Distillation Control Methods	Award and start project	Develop advanced control methods for distillation columns to minimize waste streams	Evaluate methods to reduce deviation, increase response time and reliability of advanced distillation control methods to improve distillation columns, and identify potential industrial host sites
Recover Chlorosilan Intermediates	Award and start project	Start scale up testing to recover valuable chlorosilane intermediates from organosilicon compounds wastes. Convert chlorosilane intermediates generated during silicon production into industrially useful products	Test advanced methods to recover valuable chlorosilane intermediates from organosilicon compound wastes at industrial commercial scale sites
Recycled Tire Rubber into Asphalt	Award and start project	Complete developmental testing and begin demonstration phase of using recycled tire rubber in pouring asphalts	Analyze demonstration test results of using recycled tire rubber in asphalt and optimize mixture to improve performance characteristics based on test results
Ethanol from Refining Wastes	Award and start project	Begin field demonstrations of producing high quality ethanol from refinery waste gases.	Operate a pilot plant to demonstrate the technical and economical viability of producing ethanol from refinery waste gases
Metals/Pulp and Paper Industry Solicitation	Issued competitive solicitation targeted at reducing waste, focusing on high-priority metals and pulp and paper industries Select top 6 - B proposals, award contracts and start projects.	Continue R&D activities for selected projects. Selected projects moved to Paragraph 1	
Dual Cure Coatings		Begin field demonstrations of solvent less coating technologies, eliminating the need for use of solvents in the manufacturing of wiring coatings	
Chlorosilane Intermediates, Dow Corning		Optimize catalyst development for conversion of fused silica waste into useful products	
Ultrasonic Sensor for Paper Stiffness		Begin development of ultrasonic sensor to allow tighter process controls, increasing paper yield per unit of pulp	Develop and demonstrate an ultrasonic sensor for on-line measurement of paper stiffness
Paper Mill Sludge Utilization		Develop and design system to convert paper mill sludge to higher value chemicals	Construct and begin operating a demonstration plant to convert paper mill sludge to levulinic acid (a high value chemical product)

Petroleum Industry Solicitation (projects listed below)	Select top five proposals (listed below) from solicitation award contracts and start projects	Solicitation completed. Projects started in FY 94	
Pulp Bleaching Waste Recycling		Begin development of membrane system to convert sodium sulfate from pulp bleaching to useful feedstocks	Design and test prototype membrane system to recycle sodium sulfate from pulp bleaching
Simultaneous Waste and Energy-Environment-Economic Tabulations (SWEEET	Analyze EPA and Bureau of the Census micro-level databases to determine cost effective opportunities for waste reduction R&D	Analyze databases to determine waste reduction opportunities in the metals and electronics industries	Analyze waste, energy and production databases to determine the areas where new waste minimization technologies are most required to reduce industrial pollution and increase industrial competitiveness
Life cycle Computer-Aided Data (L-CAD)	Expand the usefulness of life-cycle analysis to reduce both waste and energy	Assess and compile data on six additional commodity/energy process inputs. Continue incorporation of database into electronic format, extending its usefulness as an environmental decision making tool	Commercialize *Life Cycle Analysis software modeling* tool with public data base to facilitate the performance of life cycle analysis so industry and government can make more informed environmental decisions
National Industrial Competitiveness through Efficiency: Energy, Environment, and Economics (NICE^3)	Monitor NICE^3 grants issued in FY 1993. Issue 20 new grants in FY 1994. Analyze and prepare case studies and initiate workshops to expand use of technologies demonstrated in previous NICE^3 grants. Initiate cross training program for regional personnel in NICE^3 program	Monitor NICE^3 grants issued in previous years. Issue 12 new grants in FY 1995. Analyze and prepare case studies and initiate workshops to expand use of technologies demonstrated in previous NICE^3 grants. Continue cross training program for regional personnel in NICE^3 program	Monitor NICE^3 grants issued in previous years and assist participating companies and states in commercializing waste reduction, energy efficient, cost saving technology. Issue 12 new grants for the fiscal year. Assist states and industry in establishing a national database to transfer NICE^3 developed technologies to additional users
National Industrial Competitiveness through Efficiency: Energy, Environment, and Economics (NICE^3)		In support of the President's Climate Change Action Plan, expand the NICE^3 program to take advantage of the energy efficiency, waste reduction and associated greenhouse gas emissions reductions	Continue support of the President's Climate Change Action Plan, expand the NICE^3 program to take advantage of the energy efficiency, waste reduction and associated greenhouse gas emissions reductions
R&D Opportunities for Waste Reduction in the Chemical Industry	Initiate education programs and cooperative workshops with NIST	Continue education programs and workshops to transfer new waste reduction technologies to industry	
DOE - Center for Waste Reduction Technologies Cooperative R&D Activities		Start joint American Institute of Chemical Engineers - Center for Waste Reduction Technologies (AIChE-CWRT) industry and OIT funded R&D projects aimed at reducing waste and increasing energy efficiency in the industrial sector	Complete engineering development of ongoing projects and initiate scale-up to bench-scale research on cooperative AIChE-CWRT pollution prevention projects. Continue technology transfer and education activities
DOE - National Center for Manufacturing Sciences Cooperative R&D Activities			In conjunction with the National Center for Manufacturing Sciences (NCMS), scale-up to pilot scale demonstrations of environmentally conscious manufacturing R&D projects. Conduct industrial pollution prevention R&D targeting workshop
Federal Legislative/Regulatory Incentives and Disincentives	Start opportunity and incentives/disincentives assessments	Complete opportunities assessments	

Petroleum Industry Solicitation (projects listed below)	Select top five proposals (listed below) from solicitation award contracts and start projects	Solicitation completed. Projects started in FY 94	
EPACT Section 2108	Analyze non-hazardous industrial wastes to identify opportunities for waste reduction. Initiate workshops to focus industry attention and acquire industry input on non-hazardous waste	Complete opportunities assessments	
Total Overall Funding	$12,799,000	$16,360,000	$17,876,000

Question: How would you adjust the program if you were held to fiscal year 1995 funding level in fiscal year 1996?

Answer: Several projects would be delayed 1-2 years resulting in increased cost to industry. The budget reduction would also delay the industries ability to commercialize the technologies and provide benefits to the nation and delay their ability to improve their competitiveness. Any growth in the industry would be delayed, reducing near term job growth.

Question: Funding for waste utilization and conversion programs is proposed to increase from $9,849,000 in fiscal year 1995 to $11,784,000 in fiscal year 1996. That's a 20% increase. How much of the requested increase in your automotive recycling program is for accelerating tire reuse efforts ($5,808,000 in '95 and $7,660,000 in '96--budget p. 373).

Answer: The scrap tire utilization project has an increase of $186,000; from $914,000 to $1,100,000, from FY 1995 to FY 1996.

Question: What are you doing now in the tire reuse area and how would that change in fiscal year 1996?

Answer: As a result of a solicitation in 1987, we started supporting cost-shared (20% in the early phase) R&D of a new technology that enables finely ground, old tire rubber to be surface-activated so that strong chemical bonds are achieved, when these rubber granules are added to various polymers. The result is usually a material that has either superior mechanical properties or lower cost or both. In the short time that the surface-activated tire rubber material has been available for evaluation by the molders and manufacturers of plastic products, many products have been shown to improve. The market for our scrap tires, using this technology, is much larger than needed to use all of the scrap tires. The expected net energy savings exceed 0.3 Quad annually, the potential economic benefit to the nation is over $200 million annually. FY 1996 is the last year of DOE funding the acceleration. The industry cost sharing is projected to exceed $1,425,000 in FY 1996.

Question: The Bureau of Mines has also done work over the years in recycling. How do you coordinate your efforts with the Bureau of Mines?

Answer: The DOE Program Managers and Program Managers at the Bureau of Mines have developed a joint statement of work and have conducted dozens of coordination meetings, over the past ten years.

Question: What projects comprise the balance of the increase requested for vehicle recycling?

Answer: Auto Shredder Residue is the largest part of the FY 1996 budget because all of the plastics in our vehicles end up in this residue stream and are presently land filled. The recovery of polyurethane foam from vehicle seats has been shown to be economical in a new process developed by ANL, as part of a CRADA with the Vehicle Recycling Partnership (Chrysler, Ford, GM). The economical recycling of the other plastics (thermoplastic parts) is the goal of another ANL process under development.

Question: What are you doing in the area of appliance panel recycling, and why is the Department of Energy involved in this work? (Budget p. 373)

Answer: Most of our large appliances (e.g., refrigerators, washers, dryers, etc.) are land filled because of the large plastic content relative to the amount of metals; the shredders do not want the expense of land filling the nonmetallic portion, which becomes shredder residue. In addition to the economic and environmental benefits, the energy savings that will result from the economical recycling of the plastics and the metals is projected to be 93 trillion BTU in 2010.

Question: Please explain your proposal to design and construct a commercial-scale recycling demonstration plant for appliance panels in cooperation with Frigidaire and Appliances Recycling Centers of America. ($290,000 in '95 and $750,000 in '96 -- budget p. 373.)

Answer: The nonmetallic portion of large appliances discussed above is the subject of research and development at ANL, in collaboration with Whirlpool, Frigidaire and Appliance Recycling Centers of America, Incorporated. The economical recycling of the ABS and High Impact Polystyrene plastic panels is the goal.

Question: What is the Department's role in this project and why isn't industry doing it on its own?

Answer: DOE is supporting, with cost-sharing from industry, the high risk R&D of new chemical processes for the recycling of plastics. The appliance manufacturers do not have the laboratory expertise and facilities required for this. In 1995, ANL is developing the process at lab scale, using various samples of materials, shipped into Argonne. At this point, the purity of the recovered ABS is 99.4%, which is commercially adequate; the yield is only 74%. The next step, in 1996, is to do the R&D necessary to improve the yield, at a scaled-up plant operating in a commercial environment. This will be at a facility of Appliance Recycling Centers of America, in Minneapolis, MN.

Question: What are the year-by-year costs, beyond fiscal year 1996, for this recycling demonstration plant and how much of those costs will be borne by DOE and each of the industry participants?

Answer: In 1997, the DOE cost will be $200,000; the industry cost will be $400,000. This will complete the DOE role. In 1998, the industrial participants will commercially replicate the business, into other cities.

Municipal Solid Waste

While the budget for municipal solid waste program is remaining relatively constant, decreases in data collection analysis are being used to pay for increases in municipal solid waste combustion.

Question: What are we doing in the area of municipal solid waste combustion?

Answer: The major focus in FY 1996 is to conduct emission abatement trials at an operating municipal solid waste to energy facility. This is to assist many older waste-to-energy facilities improve their emission abatement cost effectively in order to meet the more stringent standards resulting from the Clean Air Act Amendment of 1990. Many communities are faced with decisions to either conduct costly retrofits or close facilities. Nine units with over 5000 tons in daily waste capacity have shutdown recently. In addition, work will be completed on co-combustion of coal and densified refuse-derived-fuel. This is one of the objectives of EPACT Section 1303. "Clean Coal, Waste-to-Energy". Further, this activity will collaborate with national elements of both the plastics and paper industries in promoting environmentally acceptable combustion for their waste products currently going to landfills.

Question: How is your work different from Fossil Energy efforts in this area?

Answer: This activity effort has been tailored to meet the unique combustion and emission problems of this adapted fuel. Refuse-derived-fuel is a mixture of assorted household and commercial wastes to which conventional coal, oil, gas technology can not be applied without major process modifications. Also, under the Clean Air Act, municipal solid waste has its own specific emission standards. These are more stringent and comprehensive than for fossil fuels. The major effort in FY96 will be testing cost effective strategies to meet new proposed standards.

Question: What specifically will you do with the increase requested for fiscal year 1996? ($840,000 in '95 and $1,195,000 in '96--budget p.377)

Answer: The additional funds will be used to complete cost shared field trials discussed in a previous answer.

Question: Describe your data collection and analysis effort in the area of municipal solid waste.

Answer: This effort is intended to help communities make informed decisions by giving consistent data describing their municipal solid waste management choices. Data Collection and Analysis might more descriptively be called Information Analysis and Outreach. The goal is to provide to municipal solid waste professionals the information they need to effectively plan and operate municipal solid waste management systems throughout the country. Two categories of data and information are included in the program. Systems data involve the cost and operating characteristics of the different technology options available to local waste managers. Emissions data allow professionals to compare the local and national environmental implications of the various waste management options. The activity cooperates with local waste managers, the waste industry, state legislatures and the Environmental Protection Agency to identify the information which is needed by all parties, evaluate the quality of available information, secure information which is not presently available, and communicate the information to interested parties through reports, magazine articles, conferences, public presentations and personal contacts.

Question: Data collection and analysis funding decreased from $2,200,000 to $1,897,000 in fiscal year 1995 and is proposed to decrease further to $1,485,000 in fiscal year 1996. Please explain.

Answer: The initial set of reports/projects have been completed or are in the process of being completed. The effort is focusing on waste management areas where data is missing. For example, there is extensive data on municipal solid waste combustion, less data on landfills, and minimal data on composting. The reduced budget also reflects cost sharing with the Environmental Protection Agency on some projects.

Question: Why is energy conservation doing this data collection and analysis rather than EPA?

Answer: This is the only Federal activity that focuses on municipal solid waste management disposal options and its beneficial use as an energy and material resource in an integrated manner. Different organizations under the Environmental Protection Agency administer several laws and initiatives that deal with components of municipal solid waste management, for example: Pollution Prevention goals are to reduce the amount and toxicity of wastes generate in general; Global Climate Change Outreach activities focus on methane greenhouse gases from landfills; separate programs administer landfill regulations, combustion emission standards, and reduce, reuse, and recycling initiatives. This activity has collaborated with these different elements of the Environmental Protection Agency and cost shared in joint projects. This has assured that the significant energy conservation potential of municipal solid waste is not overlooked in these projects.

Question: Who uses the data?

Answer: The data are used by a broad spectrum of interested parties. Some of the major audiences that have requested copies of the research and information reports include the following:

- municipal solid waste managers (public works managers)
- local and state recycling coordinators
- engineering consultants to state and local governments
- companies in the municipal solid waste management industry
- state legislators
- academia
- trade and professional associations

Copies of 17 different report titles have been requested and supplied over the last two years. Demand has been brisk and several of the reports are in their second or third printing. Reports are available free for a period of two years, following which they may be purchased from the National Technical Information Service.

Materials and Metals Processing

Metals Initiative

Question: Funding for the metals initiative is proposed for an 112% increase ($5,187,000 in '95 and $11,019,000 in '96 - budget p. 380). Please explain the large increase for the metals initiative.

Answer: The request for both fiscal years 1995 and 1996 are below historic levels. From fiscal year 1990 through 1994, the Congress appropriated approximately $18 million per year for the Metals Initiative. Our request was reduced because the Metals Initiative projected a carryover of $13,700,000 from prior years into fiscal year 1995. These funds had been appropriated by Congress to provide 50 percent cost sharing for a Direct Ironmaking/Waste Oxide Demonstration project. However, a proposal for this demonstration has been delayed until April 1995, pending results of the (now successfully completed) Waste Oxide Recycling Project but an acceptable proposal was not secured. Therefore even though the fiscal year 1995 request was lower, spending was expected to remain relatively constant. Unfortunately the Congress has proposed rescinding the carryover funds and it is no longer possible to begin this demonstration project. The carryover resulted from not having received a satisfactory proposal for a project which had been budgeted by DOE and for which the Congress had appropriated funds.

Question: What is meant by "advanced process control" and why is funding in this area increasing from $3,093,000 in fiscal year 1995 to $4,369,000 in fiscal year 1996?

Answer: As directed by the Congress, the Department of Energy developed a Research Plan for the steel industry in 1989. This plan identified nine priority areas for research and development. One of the nine was the application of computer technologies for steelmaking.

Advanced Process Control comprises six very diverse sensor and control system research tasks. These are being cost shared by 15 steel companies. Each task focuses on a specific aspect of steelmaking. The tasks include sensors for measuring the composition and temperature of off-gasses from steelmaking vessels, on-line property measurement for steel as it is rolled, and on-line instrumentation to measure temperature and phase distribution of zinc and iron in galvannealed steel sheet. In 1996, four of the sensors and/or software will undergo production plant trials in order to verify their operation in a production environment. This requires higher levels of funding.

This program has achieved its first commercial success: A user friendly computer model of the hot strip mill. This model will permit steelmakers to predict the microstructure and properties of carbon steel before it is hot rolled, and to develop rolling practices for new alloys. Current research is extending this model to more sophisticated steels.

Question: No funding is requested for steel plant waste recycling. What are you doing in this area and why is no further funding needed? ($1,094,000 in '95 - budget p. 383)

Answer: Today the steel industry produces over 8 million tons per year of iron and carbon bearing wastes. Approximately 50 percent of these are sold at a fraction of their true value, and the remaining 50 percent are landfilled at a cost of $25 per ton or more. Electric arc furnace dusts are considered hazardous and cost $200 per ton to landfill or process. This project is intended to adapt the coal based smelting process developed in the AISI/DOE Direct Ironmaking process to recycle steel plant wastes. This smelter recovers these waste materials at their full value using less energy in an environmentally friendly process that produces no waste.

As directed by the Congress, the Department of Energy developed a Research Plan for the steel industry. This plan identified nine priority needs for research and development. Two of the nine priorities were the development of a coal based direct ironmaking/steelmaking process and new technologies to benefit the environment. Waste Oxide Recycling addresses both of these priority need.

This phase of the project has been successfully completed. Operation of the pilot smelting unit indicated that it is possible to produce molten pig iron from steel plant wastes and recover the zinc from the waste stream. The process produces no solid waste. The next phase is to demonstrate this process. This demonstration is necessary both for commercialization of the Waste Oxide Recycling Process and to develop design parameters for installation of the first of Direct Ironmaking plant. To finance this demonstration, the Metals Initiative originally projected a carry over of $13,700,000 from prior years into fiscal year 1995. These funds had been appropriated by Congress to provide 50 percent cost sharing for a Direct Ironmaking/Waste Oxide Demonstration Project. These funds have since been rescinded and are not available to begin this demonstration project.

The United States steel industry needs this technology. Towards the end of the century it will be required to make major investments in coke oven and blast furnace rebuilds. Therefore it will benefit greatly from any alternative low capital ironmaking process that eliminates the need for coke ovens.

It is estimated that a demonstration of Waste Oxide Recycling would require $60 million in DOE funds over a four year period. Industry and DOE will share equally in the cost of this project.

Question: What is a pressure calciner?

Answer: Calcination -- heating at high temperature -- is the last step in the production of alumina from bauxite ore. In the calcining step, water is removed from the alumina trihydrate and the crystalline phase is converted from gibbsite to a mixture of alpha and gamma phases, to prepare it for processing in the Hall-Héroult electrolytic cell. The current alumina calcination process at atmospheric pressures produces a high alpha phase alumina content which requires high temperatures (1000°C to 1150°C) to drive out the water. The new high pressure (120 psig) process operating at a lower temperature (~650°C) shifts the recrystalization kinetics to form only gamma phase alumina. The water is also driven out of the gamma alumina at this lower calcining temperature, thus saving energy. The new calciner system is designed to recover steam from the process to provide 75% of the heat for the bauxite digestion / purification (Bayer) process in the plant.

In addition to energy savings of 10 trillion Btu annually, the new calciner will produce an alumina that has improved physical properties over the alumina from a conventional calciner. The higher surface area, more uniform particle size and reduced dusting of the alumina particles simplifies the material handling and environmental control systems. Reduced dusting will save U.S. aluminum smelters up to 3% production costs and 200,000 tons of solid waste disposal annually. Researchers estimate that the total benefits of using the energy-efficient calciner will amount to a savings of 3% to 5% of the operating costs of alumina production.

Question: Explain the pressure calciner project with Alcoa. What is the Department doing and what is Alcoa doing?

Answer: In the 1980's, Alcoa successfully demonstrated laboratory scale proof-of-principle tests and characterized the product for the new pressure calcination process and published the results in 1986. Projected benefits of 20% reduction in energy consumption and carbon dioxide emissions, 3% to 5% savings in operating costs and improved alumina properties make this new technology attractive to both the aluminum industry and the Department. Significant technical hurdles must be overcome before the technology can be demonstrated in its commercial operation. U.S. alumina capacity has been over-built which lowers industry's priority for advanced research on alumina calcination. Alcoa's existing Mark-III fluid flash calciner achieves up to 90% theoretical efficiency operating at atmospheric pressure and is considered to be the current state-of-the-art in alumina calcination. Alcoa's economic units have indicated that if available, the new technology would be used. Alcoa and the Department signed a partnership agreement in April, 1994, as part of the Metals Initiative Act to develop a cost effective, energy efficient pressure calciner for retrofit and green field applications for the production of alumina with improved properties. The project is gated into critical scale-up phases, each with its own set of technical, environmental and economic requirements.

In accordance with the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988, Alcoa will contribute 30% of the total project in cash contributions for Phases I, IA and II. The Alcoa Technical Center, corporate Alcoa and the company's technology-related Business Units have committed their resources to this project. Alcoa will perform all research in their laboratory or alumina refining plant and will have their Business Unit management teams involved to make sure an economically viable process is developed. Once demonstrated as a viable technical and economical process, Alcoa plans to fully fund the construction of a full scale unit (50,000 kg/hr).

The Department will provide 70% of the total project in periodic financial assistance awards for Phases I, IA and II. The Department will review experimental design, test plans, technical progress and intervene if issues critical to project success are not being addressed. The project Phases used to manage the program are:

Phase I -	Design, construct and operate a 100 kg/hr (nominally three-tube) pilot plant to resolve critical operating and design parameters identified in laboratory-scale, single tube, pressurized calcination tests.
Phase IA -	Prepare a definitive economic and mechanical assessment of the proposed calciner design for Phase II as compared to state-of-the-art technology, including commercialization costs, benefits, payback, and associated risks.
Phase II -	Design, construct and operate a semi-commercial scale unit (10,000 kg/hr) at an existing Alcoa alumina refining plant to provide scale-up and long term steady state operating data for a commercial unit.

Question: Why do you need $2 million for this project in fiscal year 1996? (No funds were provided in fiscal year 1995.)

Answer: Fiscal year 1993 and 1994 funds were used to fully fund Phase I of the high pressure calciner project to avoid any interruption in the pilot plant tests scheduled for completion by May, 1996. Without a complete set of Phase I test data, it would not be possible to conduct a detailed technical, economic, environmental and risk analysis for a Go/No-go decision to proceed with the Phase II scale-up of the technology to a semi-commercial demonstration unit. Committed funds carried over from 1994 were used to fund the project in 1995. A portion of the fiscal 1996 funds ($118 K) are required to complete the technical and economic viability analysis for the technology and a cost/risk assessment for Phase II. These analyses will provide the basis for the mid 1996 decision point for committing the balance of the fiscal 1996 funds to begin the design, purchase of long lead-time equipment and the construction of the Phase II semi-commercial scale high pressure calciner.

Question: What are the year-by-year costs for the pressure calciner project and how much of these costs are being borne by the Department and by Alcoa?

Answer: In accordance with the Metals Initiative Act, Alcoa will contribute 30% of the total project in cash contributions for Phases I, IA and II of the pressure calciner project. The Alcoa Technical Center, corporate Alcoa and the company's technology-related Business Units have committed their resources to this project. Existing facilities and equipment at the Alcoa

Technical Center and an existing Alcoa alumina refinery plant will be used to support the project at no cost. The Department funding of $1,042,00 for Phases I and IA will provide technical validation of the new process and provide sufficient information so that an accurate cost/benefit/risk analysis can be made for a Phase II semi-commercial scale demonstration test which is estimated at $12 million ($8.4 million DOE). If the technical and economic criteria are met, Alcoa plans to fully fund a full-scale sized unit. The funding history and out year mortgages through completion of the project by June, 2000 are summarized in the following table.

Funding by Fiscal Year ($K)

	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
Phase I							
DOE:	496	428	0				
Alcoa:	213	183	0				
Phase IA							
DOE				118			
Alcoa				51			
Phase II							
DOE				1882	4000	2600	
Alcoa				807	1714	1114	

Question: You propose to spend $1,650,000 to design and begin installation of a 200,000 ton electrochemical dezincing plant. What work have you done to date in this area ?

Answer: By the end of fiscal year 1993, our cost sharing partner MRII had constructed, at his expense, a pilot plant. This plant has successfully dezinced about 1000 tons of automotive stamping plant scrap and achieved greater than 90 percent zinc removal. An automobile manufacturing company has successfully melted approximately two hundred tons of dezinced scrap in its induction furnace and cupola. Approximately 530 tons of dezinced scrap has been baled and stockpiled for a 1,500-ton basic oxygen furnace trial at LTV Steel later in 1995. A licensing agreement and joint venture for dezincing has been concluded with two companies willing to cost share a 200,000 ton per year module to demonstrate this technology. Large-scale tests have also shown that electrochemical dezincing is able to remove polyvinyl difluoride, acrylic, and epoxy coatings. A memorandum of invention has been filed for a method to remove copper from steel scrap while dezincing.

Galvanizing is a process which adds a zinc coating to steel to improve its resistance to corrosion. During the 1980s, the amount of galvanized scrap in automobiles increased greatly. Today these autos are returning to the steelmaking process as scrap. Development of a commercial dezincing process is essential because the zinc coating creates air and water pollution during steelmaking, decreases the recyclability of steelmaking dust, and adversely affects the properties of steel.

Question: What are the outyear costs of the dezincing project ?

Answer: The estimate of funds required for fiscal years 1997 and 1998 are $2,100,000 and $1,000,000, respectively. These will provide DOE's cost sharing for design and installation of the 200,000 ton per year demonstration module, one year operation, and further product and process development activities. Subsequent commercial installations will be constructed from multiples of this module. Industry will provide 53.5% of the total cost for this demonstration.

Question: Why is the government involved in this project ?

Answer: The U.S. steel industry has faced financial crisis for many years. Research and development have been pushed to lower priority as modernization and environmental needs consumed the industry's available funds. The Metals Initiative's program of cost shared research has increased the total pool of funds available to the industry for research and encouraged added research expenditures by industry. Dezincing of steel scrap will benefit the entire society by reducing zinc contamination in water and air. Over 50 percent of the nation's steel is produced from scrap. Dezincing upgrades the quality of the total scrap pool which is being seriously degraded by the increase in galvanized and highly alloyed steel scrap. Lastly, this dezincing process will recover metallic zinc valued at $128 million annually and which is currently imported. Government support for this demonstration will hasten the day when these benefits begin to accrue to society. Without government support, this demonstration will certainly be postponed and may be canceled. Using the funds realized from the use of this technology, industry will repay the government 150% of the funds that it advanced.

Question: $500,000 is requested to commercialize selected technologies developed by DOE National laboratories. Exactly how would this money be used?

Answer: One of the goals of the Metals Initiative is to bring the skills and resources of the National Laboratories to bear on the problems of industry. For this reason, the National Laboratories have been an integral part of Metals Initiative research from its beginning. Through this association the steel industry and the American Iron and Steel Institute have come to recognize the labs as an important source of new technology.

Currently the Institute is soliciting proposals from the labs for new technologies which are ready for demonstration in commercial plants. Secondly, in an earlier Metals Initiative project, Lawrence Livermore National Lab developed a steel alloy which is believed to be capable of producing a superior tire cord. Added research is necessary to commercialize this technology. If successful, this alloy could save 0.I quadrillion BTU per year due to lighter weight tires and reduced rolling resistance. These enable greater payloads for trucks and greater fuel economy for all vehicles. Today all tire cord is imported into the United States. This superior product could recapture the entire market of 275,000 tons per year for domestic steelmakers. Another possible project is the development of improved sensors to detect radioactive contaminants in scrap. These have been a serous source of problems in recent years. Due to their history in defense programs, the National Labs have a great deal of experience in monitoring and detecting radioactivity. These funds will be used to start one or more of these projects.

Question: An increase of $1.5 million is requested for aluminum spray forming, as part of the partnership for new generation vehicles initiative. What would you do with these funds? (budget p.384)

Answer: The $1.5 million increase in funding in fiscal year 1996 will be used to design and start the construction of a pilot-scale plant to demonstrate that the aluminum spray forming process is a viable manufacturing alternative to conventional ingot casting-hot rolling, enabling the production of advanced products with reduced energy requirements, lower cost, and improved product characteristics. A cooperative agreement was signed with Alcoa in April 1994, to translate current bench-scale spray forming technologies into a cost-effective aluminum sheet production process for commercialization by the year 2000. This will be accomplished in proof-of-principle tests at the pilot-scale phase including development of an investment strategy for technology transfer. The benefits of spray forming include:

- Energy savings over conventional ingot casting-hot rolling of up to 27%,
- A 13% reduction in costs compared to ingot casting, resulting in a near-net-shape product,
- Increased use of lower cost recycled aluminum due to improved tolerance to impurities,
- Improved metallurgical properties (corrosion resistance, strength, toughness) due to rapid solidification, and
- Fabricated use of aluminum in automobiles with subsequent fuel savings and increased recyclability.

Successful completion of this project will provide a demonstrated technology to increase the competitiveness of the domestic aluminum industry by reducing energy requirements and production costs, increasing the content of recycled aluminum with no loss of material properties and enabling the production of new products with enhanced performance. Industry savings of up to $27 million per year are estimated for spray-formed aluminum sheet production. Energy savings of up to 0.7 quad Btu's per year and associated reduction in carbon dioxide emissions of up to 56 million tons per year can be achieved with increased use of aluminum for lightweight automobile structures possible with spray forming. A large gap exists in this technology between bench-scale research and application studies and commercial processes/hardware. Because of the risk associated with these technical hurdles, industry is reluctant to pursue this technology on their own. It is appropriate for the Department to enter a partnership with industry in this technology development which closely fits both the Department's mission and the legislation provided by Congress.

In accordance with the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988, Alcoa will contribute 30% of the total project in cash contributions for the aluminum spray forming project. The Alcoa Technical Center, corporate Alcoa and the company's technology-related Business Units have committed their resources to this project. Existing facilities and equipment at the Alcoa Technical Center will be used to support the project at no cost. The project funding history and out-year mortgages are summarized in the following table.

Funding by Fiscal Year
(Dollars in Thousands

	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99
DOE:	$2,121	$976	$1,000	$2,500	$5,500	$1,553	
Alcoa:	545	783	429	1,071	2,357	666	

To realize the full potential of this technology, it is necessary to characterize existing linear-spray nozzle systems and explore design concepts tailored for the continuous production of aluminum sheet and plate alloys. The first two years of the project focussed on the characterization and optimization of liquid metal, linear-spray nozzle design and operating parameters using water analog models, high speed photography, laser particle size distribution analysis and microstructure characterization. Prototype 4" strips of spray formed automotive sheet material have been successfully produced at commercial production rates (70-90 tons/hr) and with acceptable surface texture and superior metallurgical properties. Down selection of the optimum linear-spray system at bench-scale will be completed by early 1995 to begin pilot-plant design and construction by mid-year. The pilot plant will be located at the Alcoa Technical Center and be capable of spray forming 24 inch wide by 0.1 to 1.0 inch thick aluminum automotive sheet material

Due to budgetary constraints in fiscal year 1995, the purchase of long lead-time equipment ($5,705,000) for the pilot plant was delayed to 1996. The $1.5 million increase in the aluminum spray forming budget for fiscal year 1996 will be used to complete the design and to start construction of the pilot-scale plant. Purchase and installation of the majority of the support equipment will have to be delayed for fiscal year 1997 funding. The original April, 1999, completion date for this project will be delayed by approximately 1.5 years, provided there are no further reductions in project funding.

Question: What work on aluminum spray forming would you do if funding were held to fiscal year 1995 level? ($1 million vs. $2.5 million)

Answer: Holding the aluminum spray forming project funding to the fiscal year 1995 level would limit work to the bench-scale studies to identify the key spray forming variables that affect rapid solidification and the microstructure of selected alloys. There would be insufficient funds to continue scale-up of the linear spray nozzle system at the Idaho National Engineering Laboratories and to complete the pilot plant design. In addition to the assembly of an experienced engineering team, significant space, equipment and support facilities at the Alcoa Technical Center have been committed to this project. A portion of these resources would be lost to other company projects by any further reduction in Department funding. The additional year delay resulting from this reduced funding could necessitate the revision of the total project costs and reevaluation of the support for the project by Alcoa's technology-related Business Units.

Foundries and Glass

Question: What is the Vision of the Future effort? (Budget p. 387) Who is participating in this program.

Answer: The Industries of the Future effort is a new approach to the development of industrial technology. The program aligns Federal investments in technology research, development, and deployment with the needs and expectations of technology users in the private sector. The Industries of the Future approach will build on DOE's history of partnering with several industries to further design and fund resource efficient advances in each industry's production processes. The Industries of the Future approach optimizes the complementary strengths of industry and government. Industry participants create a vision that reflects the dynamic impact of market, business, social, and regulatory drivers in their industry. The vision is developed by industry, for industry, and provides a framework for shaping major advancements in technology. DOE facilitates that process, then draws from the vision's menu of possibilities to shape a portfolio of research, development, and deployment activities. DOE works with other Federal agencies, with projects in these same industries, to provide a broad based coordination of funding support. All technology development projects involve some industry cost sharing, both to ensure industry's commitment to the technologies selected and to enhance the probability of subsequent commercialization.

The present focus of the Industries of the Future strategy is on the seven industries that account for 80 percent of the energy consumed in manufacturing, and for more than 90 percent of the wastes generated. The seven industries are the aluminum, chemical, forest products, glass, metal casting, petroleum refining and steel industries.

Question: What funds are available to continue the rapid glass refiner project ($2,292,000 in FY 1995 and no funding in FY96)?

Answer: There are no direct funds available in FY 1996 to continue efforts in glass. The FY 1995 funding has been put towards projects that will focus on the technology gaps that significantly impact the industry; such as, a glass solicitation effort, a project in sensors and a project in advanced coatings and structural materials. The specific rapid refining effort was ended due to lack of obtaining the critical objectives for the project; their continued efforts will compete with other proposed projects in the glass solicitation, which closed March 29, 1995 and will identify 1-3 projects lasting up to three years.

Question: How many projects have you awarded in the foundries area in support of the partnership for new generation vehicles (PNGV) initiative? (Budget p. 387, 388)

Answer: No projects from the DOE metalcasting program have been awarded solely in support of the PNGV program. Under Public Law 101-425, which established the "Department of Energy Metal Casting Competitiveness Research Act of 1990" research priorities are developed by the Industrial Advisory Board for metalcasting in coordination with the vision being developed by the casting industry. Research into technologies to support the metalcasting industry support the end users of castings. Because 33% of all castings are used in the manufacturing of cars and trucks a number of the research projects funded under this program directly support the automotive industry and have strong industry support.

Question: What are these projects designed to do?

Answer: The Program functions under the auspices of the Office of Industrial Technologies (OIT) within the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. The OIT is responsible for the design, implementation and management of the Program. The goals of the OIT Programs are to:

- research high priority technologies as defined by the metal casting Industrial Advisory Board,
- expeditiously transfer research results directly to the foundry floor, and
- to establish Centers for conducting Metal Casting Competitiveness Research. This activity covers the solicitation of proposals in metal casting to comply with this law. Proposed projects must identify university-based research that supports the competitiveness and energy efficiency in the United States metal casting industry while targeting those areas identified by the Industrial Advisory Board of metal casting.

Question: How much of the $1,742,000 requested in fiscal year 1996 for foundries work as part of the PNGV program is for new projects? How will you use the balance of funds?

Answer: $1,242,000 of the fiscal year 1996 request will be for new projects to support the metalcasting industry. The remainder of these funds provide continuation of projects selected for funding in the fiscal year 1995 solicitation and for program support which includes funding of the Industrial Advisory board meetings.

Advanced Materials

Question: Why is the budget for advanced ceramics and composites decreasing from $4,316,000 in fiscal year 1995 to $2.5 million in fiscal year? (budget p. 391)

Answer: The decrease results from completion of several projects and reallocation of funds for research and development in other categories of work more directly related to industry needs. Specifically, 1) the Cooperative Research and Development Agreement between Oak Ridge National Laboratory and GM Delco Systems for catalyst development ($400,000) will be completed in fiscal year 1995, 2) support for commercialization of silica aerogel for thermal insulation ($100,000) has been obtained through the Technology Reinvestment Program of the Advanced Research Projects Agency, 3) multifaceted research and development of chemical vapor infiltration (CVI) of ceramic composites ($828,000) has produced good understanding of the process and test materials have been supplied to industry; commercialization by industry may be a long-term process, and 4) the decrease in the Advanced Materials budget ($488,000) has been taken from the advanced ceramics and composites area rather than from other areas, such as intermetallic alloys, which are now being commercialized and demonstrated in a number of industrial environments.

Question: How much of the $3,724,000 requested for new materials and processes is for new projects in support of the pulp and paper, glass, metals, petroleum refining and chemical industries? What exactly would you do and how would those industries be involved?

Answer: $2,200,000 will be in support of three new projects in support of these industries. Development of Improved Composite Tubes and Smelt Spouts for Kraft Process Black Liquor Recovery Boilers ($1,000,000) has been identified by the pulp and paper industry as critical for reasons of productivity and safety. The project will be conducted by a team of staff members from Oak Ridge National Laboratory, the Institute of Paper Science and Technology, the Technical Association of the Pulp and Paper Industry, the Pulp and Paper Research Institute of Canada. Data will be provided and materials will be tested by the boiler manufacturers, composite tube suppliers, and major pulp and paper companies in the United States. A new process for production of Uniform Metal Droplets ($700,000) will produce metal powders of uniform, controllable sizes suitable for powder metallurgy and for spray casting and coatings for corrosion resistant applications. The work will be done by Oak Ridge National Laboratory, Massachussets Institute of Technology, Tufts University, metal powder producers, and producers of stainless steel, intermetallic alloys, superalloys, and aluminum. Numerous applications have been identified in the pulp and paper, chemical, and refining industries where high temperature corrosion resistance is important. An interesting spin-off application is for precision soldering of electronic circuits. New Refractories ($500,000) to replace magnesium-chromium oxide materials, classified as hazardous waste materials, and alumina-zirconia-silica refractories, which are very expensive, will be developed for the glass industry by a laboratory-industry team. This has been identified as a major problem area by the glass industry, though the materials will find applications in other industries as well. Team participants have not yet been identified. It is important to point out that all projects funded by the Advanced Materials program in fiscal year 1996 will be in support of one or more of the industries listed above.

Question: What projects comprise the balance of the funds requested for new materials and processes, and at what level were each of those projects funded in fiscal year 1995? ($2,396,000 in '95 and $3,724,000 in '96--budget p. 392)

Answer: The remaining $1,524,000 will fund 1) Microwave Processing ($500,000; fiscal year 1995 funding is $866,000) of oxide fibers, under a Cooperative Research and Development Agreement between Los Alamos National Laboratory and the 3M Company and rapid processing of thermosets and composites by Oak Ridge National Laboratory, working with Lambda Technologies, 2) Formation of Composites by reactive metal infiltration ($500,000; fiscal year 1995 funding is $478,000) by Sandia National Laboratories in cooperation with Motorola and Zircoa, 3) Magnetic Field Processing of Organic Polymers ($250,000; fiscal year 1995 funding is $300,000) under a Cooperative Research and Development Agreement between Los Alamos National Laboratory and Dow Chemical, and 4) development of Conducting Polymers ($274,000; fiscal year 1995 funding is $325,000) by Los Alamos National Laboratory in cooperation with DuPont. These are in direct support of the chemical and refining industries, though each will have cross-cutting applications.

Industry Sector/Other Process Efficiency
Alternative Feedstocks

Question: Funding for the organic acids program has increased from $1,440,000 in fiscal year 1994 to $2,427,000 in fiscal year 1995 and $4,117,000 is requested for fiscal year 1996. What are organic acids and how are they used by industry?

Answer: Simply stated, organic acids are components made up of carbon, oxygen, and hydrogen atoms. A common household organic acid is acetic acid, better known as vinegar. Many organic acids exist, with varying potencies. But more importantly is the variety of industrial applications that exist for organic acids. Organic acids can be used to create other chemicals or to make commercial products. For instance, succinic acid can be used directly to make food preservatives, cosmetics, food flavorings, or salt substitutes. However of even greater value is the other chemicals that can be made from succinic acid. These chemicals can then be used to make products, such as: industrial solvents, degreasers, paint strippers; cosmetics; Spandex fibers - used in clothing; plastics for car bumpers; plastic films, as in magnetic tapes; and adhesives.

Question: What is the focus of the organic acids program at DOE?

Answer: The mission of Alternative Feedstocks is to promote cost-effective industrial utilization of renewable biomass resources as feedstocks in the manufacture of high-volume (commodity-like chemical production) chemical building blocks used for the production of other chemicals or materials from the starting chemical. Renewable biomass resources, such as corn or forestry products, and wastes derived from each of these, would be used in lieu of the traditional petroleum derived feedstocks. The program goal is to achieve the displacement of petroleum derived feedstocks equivalent to 1 Quad of energy by the year 2030.

Making new products from renewable materials that are abundant and available domestically will help to lessen our dependence on imported oil and petrochemicals and create markets in which United States firms can compete successfully at home and abroad. These biobased products can also help to reduce solid wastes and other environmentally toxic or problem by-products.

The United States chemical industry is a substantial contributor to manufacturing exports and has had a trade surplus every year since 1983. In 1993, the chemical industry had exports of almost $45 billion and imports of about $29 billion. This created a trade surplus of almost $16 billion. Organic chemicals comprised the largest class ($11 billion) of these exported chemicals.

Based on numerous reasons, Alternative Feedstocks chose an organic acid as its first research and development project. Succinic acid would be produced from a corn feedstock through biological processing -- fermentation.

The market selling price for succinic acid, produced by petroleum derived feedstocks, today is over $4 per pound. However, this cost would make it uneconomical to use succinic acid for the production of other chemicals or materials. Alternative Feedstocks believes that it can produce succinic acid from corn at $0.25-0.32 per pound. This succinic acid could then be used as the building block or precursor to make other chemicals. At $0.25-0.32 per pound, succinic acid is attractive -- it would be economically competitive with the same chemicals and materials derived from petroleum feedstocks.

Question: What projects are you funding in fiscal year 1995 and what do you hope to get from them?

Answer: Alternative Feedstocks provides new approaches to research partnerships. A unique consortium of five DOE national laboratories has been formed that can provide industry with easy access to the national laboratory system and can offer new approaches for collaborative research. The objective of the Alternative Feedstocks program is not to commercialize technology directly, but rather to provide industry with a broad range of expertise and to help lower the risk of new process development through federal cost sharing.

Succinic acid alone, however, is not likely to produce much of a market/energy impact. Similarly, biological routes are not the only method to derive chemicals. Other technological means to consider include thermal/chemical, pyrolysis, gasification, and liquification -- whatever it takes to convert the feed to the ultimate product. Not all starting materials (feedstocks) are equal, therefore they must be "treated" differently.

Alternative Feedstocks is funding three organic acid projects in fiscal year 1995. This includes succinic, levulinic, and 4-hydroxybenzoic acids. The department hopes to get several things from them. First, it would be advantageous to have more than one feedstock available as the starting material. Succinic and 4-hydroxybenzoic acid would use corn as its feedstocks. Levulinic acid would use waste pulp or waste wood. Second, it would be advantageous to research other technological means, as described above, of converting the feedstock to the desired chemical.

In order to convince industry that an alternative process can economically compete with the traditional petroleum process, Alternative Feedstocks chose what they considered was a near-term project: one that could demonstrate that the process works within a five year window. That process uses corn as the feedstock. Industry is skeptical that Alternative Feedstocks can replicate its bench scale results on a macro level. Attempts in the past by industry showed very limited success.

Question: Please explain the proposed increase for fiscal year 1996 and provide project by project details for the record.

Answer: In fiscal year 1996, Alternative Feedstocks plans to scale-up its succinic acid research efforts from bench testing to a pilot plant level. It is only at this level that actual results of the advanced technology techniques, such as separation by electrodialysis, can be confirmed. Industry is skeptical that Alternative Feedstocks can replicate its bench scale results on a macro level. Attempts in the past by industry showed very limited success.

In the case of the levulinic and the 4-hydroxybenzoic acids, Alternative Feedstocks has done very limited research on these projects due to funding constraints. Alternative Feedstocks proposes to continue its research efforts on these projects. In order to maintain as low a cost to the program, Alternative Feedstocks was able to obtain a cost share of 50% in each of these two projects with a network of several industrial partners.

Question: What are cellulosic feedstocks and how are they used?

Answer: Another example of a renewable feedstock is trees. Trees are not a starch-based product like corn. Instead, trees have three major components: cellulose; hemicellulose; and lignin. There is a large market for each of these products. For example, the cellulose and lignin parts could be used as starting materials for products such as:

* cellulose for paper;

* cellulose esters used in coatings, thermoplastics -- tool handles/toys/automotive parts, textiles -- about 115,000,000 pounds of fiber per year were consumed in the domestic production of apparel items such as pants, sportswear, knits, home furnishings -- as curtains, draperies, and upholstery, photographic film -- for amateur and professional photographic and motion picture industries, and film -- glossy finishes for postcards, book covers, pressure sensitive tape, or ophthalmic sheets used for eyeglass frames;

- * cellulose ethers used in latex paints, industrial thickeners, and food additives; and,
- * lignin for quinones used in polymer intermediates and dyes.

Work already was underway within Alternative Feedstocks program to demonstrate the feasibility of cleanly fractionating these parts. Matter of fact, there is significant interest on the part of industry in this work. One industrial company had tested the Alternative Feedstocks' product and was impressed with the "cleanliness" of the sample. Not only had the DOE laboratory demonstrated that the material could be separated this well, it had demonstrated that the techniques provided materials with the performance properties that met the industry's needs.

Question: What are you doing in this area?

Answer: The objective of this thermal and chemical processing project is directed at process optimization in order to learn how to most efficiently convert the renewable lignocellulosic materials into its constituent parts. Alternative Feedstocks has been working with cellulosic material feedstocks for nearly two years, with limited funding taken from the Alternative Feedstocks portfolio development budget category. In their capacity, the DOE national laboratory explored a number of renewable feedstock specimens. Most of the specimens had been trees, of both hard and soft woods. However, Alternative Feedstocks has looked at annual crops and recyclable materials, such as bagasse from sugar cane, switchgrass, and newsprint. The logic behind this is that different types of feedstocks produce varied results, some of which are more favorable than others. The fractionation of lignocellulosic feedstocks is normally limited to hardwood materials. The DOE laboratory found that a softwood feedstock could be fractionated into its components when specific conditions existed. The ability to fractionate the softwoods suggests that a potentially broader range of feedstocks may be useful in the clean fractionation process.

Question: Why is the budget increasing from $225,000 in fiscal year 1995 to $1,280,000 in fiscal year 1996 for cellulosic feedstocks?

Answer: The title of this budget category was green solvents and cellulosic materials. Green solvents is another category of chemicals that the Alternative Feedstocks program felt could produce an impact on the commodity chemical production. Here the chemical is butanol and the chosen feedstock is waste paper.

Butanol is a neutral solvent which is biodegradable. Other green solvents can be made from it. Its current United States production is 1.3 billion pounds per year, derived from petrochemical sources. It is a solvent used for fats (degreasing), waxes, resins, shellac, varnishes, and other coatings. It is used in manufacturing lacquers, rayon (fiber and cloth), detergents, films, and some plastics. Another possible application is in the dry cleaning industry to replace chlorinated solvents.

Butanol can be made by fermentation from renewable resources. In fact, before World War I, all butanol was produced this way. In this application, the Alternative Feedstocks program will explore the use of waste paper as the feedstock. It is expected to be an economical feedstock and would be environmentally attractive -- diverting waste papers from the landfill and creating a new use for the disposed material.

Question: Technology transfer and market conditioning in the alternative feedstocks area was funded at $135,000 in fiscal year 1994 and $250,000 in fiscal year 1995. $519,000 is requested for fiscal year 1996. Why is this budget increasing so dramatically?

Answer: Alternative Feedstocks does more than research and development. Market conditioning is another facet of the program. It is a method of educating others of technological advances, emerging new products, research and development successes, etc. that occur in the biobased products sector. The education process can be achieved by sponsorship of workshops, symposiums, expositions, public meetings, reports, etc. The best approach is to involve and network industry, academia, government agencies, financiers and investors at these events. DOE, USDA and other federal agencies have helped to establish those networks through events such as the Biobased Products Expo. Here, small and large businesses can showcase their products and network with others. Another example is the Alternative Feedstocks co-sponsorship of a Department of Agriculture "Situation and Outlook Report -- Industrial Uses of Agricultural Materials." This biannual report provides readers with a synopsis of government and industrial events/products, as well as economic forecasts.

Another facet of the program is technology transfer. Alternative Feedstocks aims to meet this objective in several ways. Currently, Alternative Feedstocks has sponsored focused research efforts at Historically Black Colleges and Universities. Traditional universities that excel in biobased research and development efforts are paired with Historically Black institutions.

Please note: as noted in the table below, Alternative Feedstocks carried the cost of the Historically Black Colleges and Universities in two budget categories based on the nature of this project. In fiscal year 96, the costs of this program have been placed entirely within one budget category.

Question: What is the Biobased Products Expo 96 and how is the Department of Energy involved?

Answer: Biobased Products Expo 96 is an informative event that serves to increase awareness and educate the general public, private industry, and public sector leaders about the wide range and many advantages of new biobased industrial and consumer products. This is done through technical presentations and exhibitions. The technical presentations will feature industry, government, and university leaders that can discuss such things as: industry and energy renewable resources; the environmental benefits and challenges; the investment opportunities and financial resources or new uses development; and case studies in technology development in the United States and European Communities. The exhibition will focus on the expanding industrial uses of renewable resources being developed that use traditional and alternative farm crops as their base raw material. The biobased products industry is vital to national and economic security and is basic to all United States manufacturing. Making new products from renewable materials that are abundant and available domestically will help to lessen our dependence on imported oil and petrochemicals and create markets in which United States firms can compete successfully at home and abroad. These biobased products can also help to reduce solid wastes and other environmentally toxic or problem by-products. Biobased products can also help stabilize the rural economy by creating real market demand for farm and forestry commodities.

Question: How much of the $519,000 requested for fiscal year 1996 is in support of Biobased Products Expo 96?

Answer: $45,000 towards sponsorship of the Expo, and $8,000 for expenses such as Alternative Feedstocks booth space rental, displays, public materials distribution, and travel expenses for two laboratory representatives.

Question: How will you use the balance of the funds? Please provide project by project details for fiscal years 1994, 1995 and 1996.

Answer:

	1994	1995	1996	1996 Priority
Situation & Outlook Report co-sponsoring agency (3 yr support)	$50,000	$50,000	$50,000	(3)
Historically Black Colleges and Universities R&D studies	200,000*	300,000*	300,000	(4)
Study performed by New Uses Council		26,000		
Exhibitions	50,000	10,000	63,000 **	(1)
Industrial Review Panel and expenses - honorarium, team travel, meeting hall rental, etc	30,000	20,000	25,000	(2)
Support to other biobased conferences (includes AFP sponsorship, exhibit registration, associated travel expenses)			81,000	(5)

* Alternative Feedstocks carried the cost of the Historically Black Colleges and Universities in two budget categories based on the nature of this project. In fiscal year 96, the costs of this program have been placed entirely within one budget category.

** This covers two planned exhibitions in fiscal year 1996.

Process Development

Question: How do hollow fiber active transport membranes (ATM) differ from other methods for moving hydrogen sulfide and carbon dioxide from natural gas?

Answer: Current practices for removing acid gases (i.e. hydrogen sulfide) include gas scrubbing, cryogenic processes, and conventional membrane separations. These processes are very energy intensive. For instance, gas scrubbers absorb the acid gases into alkaline solution , which then must be heated to drive out the acid gases. Conventional membranes, such as spiral wound modules have relatively low packing densities (membrane surface area per unit volume) and high fabrication costs. Instead, hollow fiber modules have high packing densities while fabrication costs are lower. In addition to the better overall economics, hollow fiber active transport membranes, unlike conventional membranes, capitalize on chemical reactions between a species in the membranes and the acid gases to be separated. This unique feature allows the acid gases to penetrate through the exterior fiber wall and enter the inner flow passage for collection. On the other hand, the non-acid gases do not react with the membrane and are thereby separated.

Question: Why is funding for the ATM program increasing from $1,787,000 in fiscal year 1995 to $2,002,000 in fiscal year 1996?

Answer: The requested increase is to cover the additional costs of designing and fabricating scale-up membrane modules for commercial applications, as planned.

Question: What are the outyear costs associated with this project?

Answer: The estimated outyear costs are:

FY 1997	FY 1998	FY 1999
$2,000,000	$2,000,000	$2,000,000

Question: What are polyphosphazene membranes and how are they used?

Answer: Polyphosphazene is a family of inorganic polymers having phosphorous- and nitrogen atoms in the main chain. Typical applications are O-rings, gaskets, and fuel hoses. These polymers, when processed in certain manners, can function as membranes based on three factors: solubility of the permeate in the polymers, molecular properties, and molecular size of the polymers. One polymer family member can allow water to pass through it, while another family member may hold water back and allow organic chemicals to pass through. Such extreme variability allows users to custom design the membrane for a specific separation need. The polyphosphazene membranes have been developed for performing separations in harsh environments. The polymers have shown exceptional chemical and thermal stability and perform separations under actual industrial conditions.

Question: How much of the $500,000 requested for the polyphosphazene membrane program in fiscal year 1996 is to initiate commercialization/ technology transfer and why is the Department involved in commercializing this product?

Answer: About $50,000 will be used in commercialization/technology transfer activities in FY 1996, with a focus on jointly testing the skid-mounted prototype membrane modules, with the CRADA partners Union Carbide and Media Process and Technology. There are three reasons why the Department gets involved in commercializing this product: 1) Membranes are an emerging technology. The membrane polymers have a great potential for wide applications that can achieve tremendous energy and cost savings for the chemical and petrochemical industries. 2) Due to it's high risk and generic nature, this technology is not mature enough for development by the private sector alone. Government support at this point is essential to any success that result from the use of this membrane technology. 3) Successful commercial applications will convince the industrial users to utilize and further develop this technology.

Question: What are the outyear costs associated with this project?

Answer: The estimated outyear costs are:

FY 1997	FY 1998	FY 1999
$1,200,000	$1,260,000	$1,320,000

Question: What are ceramic catalytic membranes and how are they used?

Answer: Ceramic catalytic membranes are ceramic tubes which are internally filled with a catalyst. This type of device combines a conventional chemical reactor and a separator into one. Because of its porous structure, the tube can function as a membrane and thereby separate different species. In actual operations, the membrane (catalyst) reacts with the feed gas and further concentrate and separate the products through the ceramic walls. The use of ceramic materials produces membrane reactors that are thermally stable up to 650°C. Benefits include higher conversion per pass, lower temperature operation, reduced downstream separation requirements, reduced recycle and feed requirements, reduced catalyst fouling or catalyst requirements, more efficient heat transfer, and more efficient process control.

Question: Why is this program increasing from $1,225,000 in fiscal year 1995 to $2 million in fiscal year 1996?

Answer: The initial application of this development work is for the conversion of ethylbenzene (a chemical converted from petroleum products) to styrene (a raw material for making rubber and plastics). The project enters Phase III in FY 1996. The requested increase is to cover the costs of increased activities, such as evaluation of the first generation of membranes (with a pore size of 40 angstrong) on the prototype scale. In the same time, the second generation reactor (with a pore size of 5-10 angstrong) will be fabricated and tested at bench scale at the end user's facility. Other technical activities include the continuous improvements on the sealing techniques, quality improvements and cost analysis.

Question: What are the outyear costs associated with this project?

Answer: The estimated outyear costs are:

FY 1997	FY 1998
$1,500,000	$ 390,000

Question: $2 million is requested to start a new program to develop an advanced fluid catalytic cracker for the petroleum refining industry. What is the rationale for this program and how is it related to the natural gas initiative? (budget p. 402, 403)

Answer: The manufacture of "designer" gasolines as prescribed by the 1990 Clean Air Act Amendment will have a profound impact on operation of refineries. The Fluid Catalytic Cracking (FCC) unit is the critical refining component. Regulatory mandates can be achieved most effectively by altering the FCC to produce more oxygenates and alkylate precursors (olefins) while reducing the yield of undesirable products, such as heavy gasoline and light cycle oils. The key to achieving this objective is to develop a more fundamental understanding of the interaction of FCC cracking kinetics.

UOP and Exxon hold the original patents on Fluid Catalytic Cracking (FCC). UOP, as a major technology developer and licensor, has not been able to develop on its own the advanced computational methodologies needed for optimizing refinery FCC systems. This is the reason UOP teamed with Chevron to access Argonne National Laboratory's unique expertise in modeling and kinetics. Such improvements would allow the industry to more effectively respond to environmental mandates by tailoring the FCC product yields to generate more olefins for the alkylates and ethers that go into reformulated gasoline (RFG). This program will have a substantial impact on anyone using transportation fuels, diesel oil, and/or heating oil provided the objectives are met. Fuel costs could be lowered, since a 7% improvement in the utilization of a barrel of oil is projected (at a national level, this equates to a 1 quad savings for the 13 quads of transportation fuels produced by FCC technology). The environmental impact of more efficient use of a barrel of oil will be felt not only in the communities that live near refineries, but also in metropolitan areas where improved fuels have been mandated. The estimated air emissions reduction that would result at full market utilization of the technology are: SOx: 44,000 tons/year; NOx, 4,200 tons/year; CO2, 3,300,000 tons/year. It has also been estimated that if the total projected crude oil savings were realized from imported crude, that this would reduce the U.S. trade deficit by 2.1%--this equates to a reduction in imports of foreign oil, and the opportunity for reinvestment to preserve and/or create job opportunities in the U.S.

The cost to upgrade a single FCC unit in a refinery has been estimated at $100 million. Regional engineering organizations, contractors, and equipment/materials suppliers will be the key providers of services required to implement the new FCC technology.

Specific program objectives are to develop a validated, integrated 3-dimensional Computational Fluid Dynamics (CFD) cracking kinetics model that will provide the industry with an analytical capability to adjust FCC operating characteristics and hardware designs to produce desired shifts in product yields, thus promoting the evolution of an advanced FCC technology. At the conclusion of the program, the validated design tools and associated database will be made available to all industry organizations interested in pursuing individual commercial opportunities.

This project supports refinery process technology innovation in order to help the industry transition from responding to regulatory command and control mandates for use of pollution control and waste management technologies to development and adoption of pollution avoidance technologies and resource conservation. Process technology innovation will help the industry develop and employ novel and/or improved high-priority process technologies and an advanced technology base that will (1) maintain and/or enhance industry competitiveness, (2) foster the evolution of more economic approaches for reducing effluent hazardous and non-hazardous waste streams, (3) improve overall refinery energy efficiency, and (4) promote greater flexibility in utilization of alternative energy, feedstock, and raw material inputs.

Twenty eight percent of the natural gas used by industry goes to petroleum refining. One of the three strategies of the DOE Domestic Natural Gas and Oil Initiative of 1993 was for increasing domestic natural gas and oil production and environmental protection by advancing and disseminating new exploration, production, and refining technologies. In turn, the DOE Natural Gas Strategic Plan specifically articulates key issues related to the expanded development and utilization of natural gas, and defines the roles of the federal government and U.S. industry in partnering to accomplish strategic goals. This program, in turn, supports the development of technologies that more efficiently utilize natural gas.

Question: How is Chevron involved?

Answer: This project is a CRADA between Argonne National Laboratory, Chevron, and UOP. Chevron is providing an FCC pilot plant, a kinetic model framework, and large scale FCC performance data for part of their cost share. UOP is providing large scale FCC hydrodynamic and yield data for part of their cost share. The FCC pilot plant will be relocated to ANL at the completion of this project for operation as a user facility.

Question: What are the outyear costs of the program?

Answer: Department of Energy:

FY 1996: $2.0 million; FY 1997: $2.0 million; FY 1998: $0.4 million

Industry:

FY 1996: $3.5 million; FY 1997: $1.9 million

Question: You have $280,000 in fiscal year 1995 and you ask for the same amount in fiscal year 1996 to "continue to support the development of a chemical industry vision". What does that mean and how exactly are you using those funds? (budget p. 403)

Answer: The "Chemical Industry Vision of the Future" concept has been of great interest to the chemical industry, including their suppliers and customers. The chemical industry has taken the lead in formulating its vision. They have expressed the desire to work with the DOE in developing an implementation plan, a road map on how the industry will reach its vision. OIT will utilizes these funds for participation in the chemical industry vision by developing background information and supporting the visioning process when requested by industry. In addition, these funds will be used by OIT to work with the chemical industry, customers and suppliers in developing the implementation plan. Also, the OIT will realign its program, in the context of OIT's mission, to support the chemical industry in becoming a cleaner, energy efficient, and more competitive industry.

Pulp and Paper

Question: Why do you need $4,478,000 to commercialize the impulse drying process for heavy weight grades of paper?

Answer: Because of the high risk and costs associated with the development of the impulse drying technology, industry has not committed to support this project without government assistance. However, industry does support this effort with a 50% cost share. The $4,478,000 is in support of the fabrication and demonstration of a pilot scale impulse dryer at the Beloit Corporation. The pilot scale impulse dryer alone will cost $5,424,000. Union Camp will commit resources to the commercialization of this technology only after a successful pilot scale demonstration.

Question: Why is the Department involved in commercializing this process?

Answer: At this time the Department is involved in the pilot scale demonstration because of the associated high risk and costs. If successful, the demonstration will lead to strong industry support in the commercialization of impulse drying technology.

Question: No funding is requested to continue work in the chemical pulping area. To what extent are projects being deferred in this area? Please provide details for the record.

Answer: The lignin sensor project was terminated in 1995 when the commercializing partner backed out. The black liquor viscometer project and the FTIR sensor project were funded for two years in 1995 and are therefore not funded for 1996. The ultrasonic sensor project is funded under the Waste Minimization program in the Waste Reduction area in 1995-96. The particle size distribution sensor project support ($200,000) is deferred until 1997.

Industry Sector/Implementation and Deployment

Question: An increase of $623,000 is requested for the Energy Analysis and Diagnostic Center (EADC) program. How much of this increase is to expand the program from 30 centers to 38 centers? (budget p. 411)

Answer: $500,000 is requested to expand the program from 30 centers to 38 centers.

Question: At what level are each of the current centers funded?

Answer: Current funding for each of the 22 centers that are designated "Industrial Assessment Centers" (IACs) is $154,000. There are currently 8 energy Analysis and Diagnostic Centers (EADCs) that receive $108,000. These schools will receive waste training in August 1995 and become IACs. In FY 1996 all 30 current schools in the program will be funded at the $160,000 level. The increase in funding is a four percent inflation cost planned in the financial assistance awards.

Question: Where would the 8 new centers.be located and how much funding would go to each of those centers?

Answer: Centers are selected competitively. However, service to areas currently not covered by center would also be a factor in determining new selections. A solicitation for new schools would not be initiated until a FY 1996 budget is approved permitting the proposed addition of schools. This would mean that new schools would not be operational until FY 1997. First year schools would have a 15 audit work load funded at approximately $64,000 that first year. The second year a 30 audit work load would be paid at the $128,000 level. In the third year these schools would receive waste management training and become Industrial Assessment Centers funded at approximately a $173,000 level . This funding increase reflects a four percent increase for inflation planned in the financial assistance award.

Question: How would you use the $1 million requested for a new project in the implementation and deployment program as part of the climate change action plan? (budget p. 411)

Answer: Support for collaborative IAC-State Office-local partner activities will be continued at the $600,000 level. Following completion of the "best practice" manual for small industry, a "best practice manual " for engineering staff at large industrial plants will be developed. Industrial assessment case studies prepared and distributed in conjunction with the Pollution Branch of the Environmental Protection Agency Risk Reduction Engineering Laboratory will be continued. Pilot work on establishing "bench marks" for small and medium sized industry in specific standard industrial codes would be started.

Question: Why is technology transfer increasing from $361,000 in fiscal year 1995 to $950,000 in fiscal year 1996? (budget p. 412)

Answer: This expansion in technology transfer reflects the commitment of the Office of Industrial Technologies to accelerate the nation's implementation of available and emerging competitive technologies, processes, and practices. The increased funding will be highly leveraged through collaboration with national, regional, and local industrial organizations, and State and local governments. In addition to amplifying the impact of DOE's investment, cost sharing with industry ensures their commitment to the commercialization of the technology. Emphasis will be on practical validation methods (for example in-plant demonstrations) for specific applications that clearly show the economic and environmental benefits of increased energy efficiency and pollution prevention. Increased importance will be given to assisting small and medium-sized businesses, and to making effective use of electronic distribution (e.g., CD-ROM, Internet). Because of the substantial leveraging and employment of techniques proven to be most effective, our approach will continue to result in a highly effective technology transfer program at relatively low cost.

Question: What are "OIT supported technologies" and why do you need $200,000 to track and evaluate them in fiscal year 1996? ($100,000 in '95 -- budget p. 412)

Answer: "OIT supported technologies" are those technologies that have been significantly funded by the Office of Industrial Technologies. In order to manage OIT's resources effectively the impacts resulting from OIT supported technologies are continually monitored. This information is critical feedback to OIT management and program managers, allowing them to make informed decisions and resulting in more cost effective investments. Increased funding is necessary to maintain the existing quality of monitoring as the number of technologies being tracked grows each year. In addition, in fiscal year 1996 the breadth of information tracked will be significantly expanded to include financial and economic factors. Presently, energy savings is the primary impact evaluated. This substantial increase in information gathering and analysis will result in improved decision making by OIT management. The current tracking effort has existed for more than ten years and proven to be absolutely necessary for effective management. The expanded effort will ultimately result in greater benefit per dollar invested.

Question: Why do you need $250,000 to present non-monetary grants to industrial associations to improve energy efficiency? ($200,000 in '95 -- budget p. 413)

Answer: Monetary grant(s) will be awarded to industrial association(s) to improve energy efficiency of member industries. A competitive solicitation is required with mandatory cost sharing for these award(s). This activity will require the bulk of the funding. However, the 1995 National Awards Program for Energy Efficiency and Renewable Energy will give non-monetary 1995 Best in Category recognition in several categories including Industrial Technology. This activity will require staff time and nominal administration costs to choose parties deserving recognition.

Question: What are you doing to update and evaluate guidelines and criteria for conducting process oriented industrial assessments?

Answer: Under a Technology Reinvestment Program project for Energy, Environment, and Manufacturing technology access the Office of Industrial Technologies the Environmental Protection Agency, and the National Institute of Standards and Technology are collaborating to develop and test an integrated assessment tool that addresses energy and resource efficiency, pollution prevention, and manufacturing operations improvement. This tool will help manufacturers implement and benefit from new and existing methods and technologies. Activities are being pilot-tested in three industry groups: screw machine products, metal finishers, and the metal forming industry. Activities will then be expanded to include other industries. The project uses expertise from the Industrial Assessment Center program, formerly the Energy Analysis and Diagnostic Center program.

Question: Why is this program needed?

Answer: The Technology Reinvestment Program project to develop an integrated assessment tool for the manufacturing sector supports the requirements of the Energy Policy Act of 1992, section 132, to recommend methods for promoting distribution and implementation of energy efficient technologies in the process industries; and section 133, to develop guidelines for energy efficient auditing and insulating.

Question: Why is funding for these guidelines and criteria increasing from $475,000 in fiscal year 1995 to $650,000 in fiscal year 1996?

Answer: Funding covers grants, assessment criteria, directory of services, awards program, meetings. The purpose of the additional funding is for State grant(s).

Question: Educational and technical assistance to industry and data collection associated with these guidelines increase from $400,000 in fiscal year 1995 to $500,000 in fiscal year 1996. How do you justify this increase?

Answer: The purpose of the additional funding is to establish a simplified assessment program for training use in technical community colleges.

Climate Wise and Climate Challenge

Question: What is the difference between the Climate-Wise program for industry and the Climate Challenge program for utilities?

Answer: The major difference between Climate Wise and Climate Challenge is in their intended primary partners: industry for Climate Wise and utilities for Climate Challenge. Both the Climate Challenge and Climate Wise programs are cross-cutting foundation actions in the Climate Change Action Plan. While both programs are voluntary, flexible programs that are designed to stimulate comprehensive action to enhance energy efficiency and reduce greenhouse gases, Climate Wise has a diverse set of industrial partners from a large chemical manufacturer to a small-sized metal fabricator. Climate Challenge has a single partner group -- the utility industry. Both programs offer technical support but Climate Wise partners require a broader set of technical assistance services due to the diversity of their manufacturing processes.

Other examples of differences are in the implementation methods that each program must employ. For Climate Wise, there are two distinct target groups: large national companies and the small- and medium-sized companies which are often located within one region or state. Therefore, Climate Wise has a national level program to interact with large companies and another program at the state and city level to interact with small- and medium-sized companies. However, in both programs, partners, not DOE, decide the voluntary actions for reducing greenhouse gas emissions.

Climate Challenge consists of voluntary commitments by individual electric utilities to undertake actions to reduce, avoid or sequester greenhouse gas emissions. Currently, over 79 agreements, representing over 320 utilities responsible for 53 percent of electric sales, have been signed with the Secretary of Energy. The signed agreements contain pledges for greenhouse gas reductions of 44 million metric tons of carbon equivalent, a large portion of which can be counted toward the overall Climate Challenge Action Plan reduction goal of 108 million metric tons of carbon equivalent.

Climate Challenge enjoys strong backing from the electric utility industry due to a desire to avoid command-and-control regulations such as the acid rain provisions of the Clean air Act Amendments of 1990. Consequently, DOE is seeing an enthusiastic response rate in the early stages of Climate Challenge. Also, utilities who are part of Climate Challenge expect to use the Greenhouse Gas Voluntary Reporting System under Sec. 1605(b) of the Energy Policy Act of 1990 to record their voluntary reductions.

Question: How much of the $3,980,000 provided in fiscal year 1995 is being used for the Climate Wise program and how much is for the Climate Challenge program?

Answer: Each program has $1,990,000 in FY 1995 funds.

Question: How are you using those funds in fiscal year 1995?

Answer: Climate Wise is using its funds to encourage large-, medium-, and small-sized companies to become Climate Wise partners. The program is negotiating with seven states to be pilots for Climate Wise support to small- and medium-sized companies. These pilot state programs will offer a full range of information services and tailored technical assistance to potential partners.

Climate Wise also offers national recognition for pledge companies and is developing protocols and verification strategies to recognize partners for substantiated achievement of goals.

Climate Challenge is using its fiscal 1995 funds in three main areas: (1) technology transfer, communications materials, and other support for utilities that have already signed, or are about to sign, participation agreements with the Secretary of Energy; (2) outreach and recognition activities to convince non-participating utilities, whether from the investor-, publicly-, or cooperatively-owned sector, to sign participation agreements; and (3) data compilation, analysis, and reporting activities.

Question: The fiscal year 1996 budget contains $2 million for the Climate Wise program. How will those funds be used?

Answer: The proposed spending plan for FY96 includes a continuation of the outreach aspect of the National Program with increased emphasis on tailored assistance, verification of results, and national recognition events. Several "national showcase" projects are planned where the Climate Wise experience of two to three large companies can be documented as examples to other companies. A continued emphasis will also be placed on gathering data and publishing documented case histories of industrial practices that positively affect greenhouse gas reduction and are also good business decisions. This information will be available through the normal distribution channels as well as on the Internet and at the Energy Efficiency and Renewable Energy Clearinghouse. The evaluation and reporting phase of the program will also be fully developed and implemented. Additional states will be added to state-level efforts.

New Starts in Implementation and Deployment

Question: How specifically will you use the $350,000 requested in fiscal year 1996 for an industrial technology strategic plan?

Answer: These funds will be used to develop an industrial technology strategic plan through a collaborative effort with OIT's governmental and non-governmental stakeholders. To create this plan OIT will work with these stakeholders to create a portfolio of advanced energy efficiency, renewable energy, and pollution prevention technologies. The plan will serve as a high level road map for how OIT's technology portfolio will be established, implemented and deployed in U.S. industry.

The primary tasks to be completed with this funding include the following:

- Develop a series of technology characterizations to develop cost and performance data for OIT technologies which are ready to be deployed;
- Develop and utilize a risk-based technology prioritization framework which is driven by economic, environmental, and industrial competitiveness criteria;
- Collect data and evaluate direct program results and estimated long-term impacts.

Question: $15,720,000 is requested for "industry-wide prepared Visions". What is this?

Answer: The Industries of the Future is a strategy to focus government research and development on the needs of broad industrial sectors to achieve a future state wherein that industry is more environmentally benign and resource efficient, and more competitive in the global market. The strategy begins with the Office of Industrial Technologies catalyzing industry to prepare a vision of their future, i.e., this is a vision written by industry, for industry. The industries which the Office works with are the seven large process industries which consume the most energy (80 percent of all energy in the industrial sector) and produces the most wastes (90 percent of all wastes in the industrial sector): steel, aluminum, glass, chemicals, petroleum refining, foundries, and forest and paper products.

After the vision has been created by industry, a technology roadmap is crafted which describes the technologies which must be developed to achieve the vision. For example, the Forest and Paper Products vision "Agenda 2020", six areas were identified as essential areas requiring fundamental improvements in order to achieve the vision, and ranged from Sustainable Forest Management to Energy Performance to Recycling. Within Recycling, the industry's technology roadmap may include a number of specific technologies which will improve the recycling capabilities of the entire industry, such as improved understanding of the fundamentals of fiber-fiber bonding, or new technologies for sludge use and disposal as a result of de-inking of post consumer newsprint. After the technology roadmaps have been completed, the Office of Industrial Technologies works with the industry to chart out the research projects which fit the Office's charter to improve resource efficiency and environmental performance.

The funds which are being requested will support research and development which is needed for industry to achieve their visions. This will consist of both new research activities, as well as continuing on, or enhancing, existing research which directly supports industry visions. The funds will likely be competed through a solicitation process, and will be structured to ensure that the research benefits the entire industry - not individual companies.

Question: The budget says this is part of the Office of Industrial Technologies Industries of the Future program. What funding is included in the Energy and Water appropriations request for this program?

Answer: The Office of Energy Research has requested $31,700,000 in the Energy and Water appropriations to support this activity. The Industries of the Future represents a joint collaboration within the Department of Energy in terms of focusing research on the broader goals of helping U.S. industries improve and continue to remain globally competitive.

Question: Why is the energy conservation program helping to fund this initiative?

Answer: The energy conservation portion of the Interior Appropriation represents 93 percent of the total funds requested by the Office of Industrial Technologies for FY 1996 (the remaining 7 percent is from the Energy and Water Appropriation for support of solar industrial applications, and anaerobic digestion research). The simplest answer is that the Interior Appropriation is the only logical source for the Office to request any funding relating to research which improves the resource efficiency and environmental performance of industry.

Although the question refers to this as an "initiative", we would like to clarify that it is not a new initiative - the Office has been engaged in the Industries of the Future strategy for two years.

Industry Sector/Management & Planning

Question: What do you propose to do to support quality metrics data and tool development in fiscal year 1996?

Answer: Quality metrics is a process that will enable the Office of Industrial Technologies to plan more rationally and make the most intelligent programming, budgeting and strategic decisions. This is especially important during a period of potential budgetary contraction when critical decisions are required to insure that the wisest reductions are made.

Data: Using a methodology adapted from the Gas Research Institute's widely praised Project Assessment Methodology, OIT is developing consistent data on the potential energy, economic and environmental benefits of the technologies in its R&D portfolio. To assure maximum access and use of the QM data, it will be embedded in OIT's database management system (currently under development) containing essential project data on all OIT technologies. As data on OIT's current portfolio is collected, QM data needs will continue to be refined and a methodology will be developed that will enable this information to be collected routinely whenever new R&D proposals are evaluated/selected for funding.

Tools: OIT is testing a variety of modeling approaches that would enable it to analyze and assess the potential benefits of its R&D portfolio in a fair and consistent manner. Among those modeling systems OIT is testing for potential further development in FY96 include:

- GRI's Project Assessment Methodology system; a test of this system will be conducted this spring that will enable OIT to see if this system of tools could be adapted to meet OIT's needs;

- Massachusetts Institute of Technology (Materials Systems Lab) is applying a Multi-attribute Utility Analysis technique on a variety of OIT advanced material R&D projects; this will enable OIT to determine the potential suitability of this methodology for meeting OIT's portfolio analysis needs;

- Pacific Northwest Laboratory has already developed computer simulation models of the paper, glass, and petroleum refinery processes and markets, and is proposing to develop similar models for chemicals, steel, aluminum, and metal foundries. OIT is testing the paper, glass and refining models using data recently developed on several of its technologies to determine the potential ability of the PNL models to meet OIT's QM analytical needs and whether or not additional models should be developed for other industries supported in OIT's "Industries of the Future" effort.

The Quality Metrics data and tools OIT is developing will enable it to more accurately forecast the potential benefits of the various RD&D projects in its portfolio. By comparing the potential benefits of these technologies with alternative funding scenarios, OIT will be better able to assess under a common set of assumptions the impact of its decisions to fund or cease support of various technologies in its portfolio. OIT's proposed FY96 funding for this effort is a very small investment with a potentially very large leveraging impact. It will enable OIT to gauge the potential long-term effects of alternative funding scenarios in a more reliable and consistent fashion. It will add more value to the Federal research dollar, provide greater benefit to the Nation, and help determine the optimal allocation of Federal resources just at a time when potential budgetary cutbacks require the most judicious decisions.

Question: How much of the increase for management and planning is for this project?

Answer: Approximately 2/3 of the increase is for QM data and tool development.

Question: What elements comprise the balance of the increase for management and planning?

Answer: The balance of the proposed increase in funding for management and planning activities covers a variety of efforts intended to assist OIT in more effectively and intelligently managing its industrial R&D portfolio. Included will be an examination of domestic and international energy use trends and the environmental and emissions problems associated with these energy use trends. Special emphasis will placed on determining the potential cost of complying with existing and proposed environmental regulations and determining how innovative technologies could help reduce the growing cost of this regulatory burden on American industry while simultaneously meeting the public policy goals established by national environmental statutes.

Transportation Sector

Alternatively Fueled Vehicle Data Acquisition

Question: How much of the $7,210,000 requested in fiscal year 1996 for fleet test demonstrations and data collection is to initiate a data collection program on light duty vehicles? (budget p. 439)

Answer: In fiscal year 1996, an estimated $3,850,000 will be used to continue light duty vehicle data collection. This amount is lower than the $4,300,000 used in fiscal year 1995 for this program. The light duty demonstration program has been in effect since fiscal year 1991 when we were collecting data on 81 M85 and gasoline control vehicles. The program has grown to where data is now being collected on over 800 vehicles operating on M85, E85, compressed natural gas (CNG), and gasoline. We anticipate initiating three new aspects of the light duty program in fiscal year 1996 within the budget requested by improving efficiencies in the current program. The new programs will include data collection on CNG and liquefied petroleum gas (LPG) aftermarket conversion vehicles; controlled data collection to evaluate performance of alternative fuels in extreme weather conditions; and data collection from a private light duty vehicle fleet, which may provide higher mileage accumulation than we currently see in the Federal fleet.

Question: Describe this data collection.

Answer: The data collection for the light duty vehicle program was designed to respond to the Alternative Motor Fuels Act of 1988, Public Law 100-94, requirement for analysis of emissions, maintenance, safety, and fuel economy in passenger cars and light vans and trucks that operate on alternative fuels. The data is collected from over 800 light duty vehicles in the Federal fleet operating on alternative fuels and the results are compared to similar control vehicles that run on gasoline. For the vehicles in the program, refueling information, miles driven, performance, and maintenance information is collected at each refueling. Emissions data is gathered on a subset of the vehicles at least once each year. The data is sent to the Alternative Fuels Data Center operated at the National Renewable Energy Laboratory (NREL) and is reported annually to Congress.

Question: How will these data be used?

Answer: The data, which is available to the public through the Alternative Fuel Data Center, can be used by State governments, fleet operators, automotive manufacturers, and the general public so that educated decisions can be made on which alternative fuel would be best for their particular use.

Question: An increase in funding is requested for expansion of NREL data collection to civilian fleet information activities. What does this mean and why are these data needed?

Answer: The civilian fleet information refers to the need to restructure the light duty vehicle program to include private fleets. This data will be useful because Federal fleet vehicles accumulate a relatively low number of miles per year. Private fleets accumulate miles at a higher rate, which will enable us to evaluate the alternative fuels at higher mileages.

Question: How much of the $400,000 increase requested for the NREL Alternative Fuels Data Center is for this effort? (budget p. 439)

Answer: Approximately $150,000 of the requested increase will be used to put the civilian fleet information into the data center. The balance of the requested increase is to fund the analysis of the data which continuously comes into the data center.

Question: The budget includes $1.5 million for grants to States and municipal fleets for alternatively fueled vehicles. How are these funds used? (budget p.440)

Answer: These funds are used to defer the incremental cost of purchasing or repowering a vehicle that will operate on alternative fuels. In exchange, the State or municipal entity agrees to collect and deliver operational maintenance and performance data to the Alternative Fuels Data Center.

Question: Why does your budget include $20 million for alternatively fueled vehicles for Federal agencies? (budget p. 440)

Answer: The subject funds were requested to pay the incremental cost of alternative fuel vehicles acquired by the Federal fleet to meet the requirements of Section 303 of the Energy Policy Act of 1992, which tasked the Department of Energy with responsibility for ensuring that these requirements are met. In fiscal year 1996, the Federal Fleet Program will acquire at least 12,500 alternative fuel vehicles, and the $20 million in the Department's budget will comprise the majority of the incremental funding for these vehicles.

Providing Federal leadership on alternative fuels is critical to the successful implementation of the Energy Policy Act of 1992, which lays out a goal of weaning our nation off its dependence on petroleum for transportation. This important Federal role was earlier identified by Congress in the Alternative Motor Fuels Act of 1988 and is endorsed by several Executive Orders. State and local governments, the natural gas industry, electric utilities, and ethanol producers in our farm States have all sought Federal leadership and commitment on alternative fuels. In addition, the auto industry is looking for consistent, committed Federal action in this area so it can make appropriate investments in alternative fuel technologies. With Congressional requirements for State governments and selected private fleets to acquire alternative fuel vehicles starting in 1996, it is more important than ever that the Federal government meet its own statutory requirements to use alternative fuel vehicles.

Acquisition of alternative fuel vehicles in 1996 will help to strengthen the emerging alternative fuels industry in the United States. Success in increasing the use of alternative fuel vehicles will help reduce the Nation's dependence on imported oil by promoting alternatives such as natural gas, ethanol, propane, electricity, and methanol. Alternative fuel vehicles will also provide an economic stimulus for domestic industry and help improve the nation's air quality.

Question: The House recommended rescinding these funds in fiscal year 1995; why shouldn't other Federal agencies be responsible for their own alternatively fueled vehicle purchases as are the Postal Service and the Defense Department?

Answer: The Department's plan for implementation of the Energy Policy Act requirements envisions that each agency will begin to take greater responsibility for alternative fuel vehicle purchases starting in 1996. During the early years of the program, i.e., 1993 to 1995, the Department has taken a strong leadership and funding role to ensure that requirements, which applied to the Federal fleet as a whole, were met. Centralized funding at the Department has allowed coordination of all agencies activities. Individual agency funding also contributed to meeting the requirements.

Starting in 1996, however, requirements for alternative fuel vehicle acquisition will be percentages "of the total number of vehicles acquired by a Federal [agency] fleet." The Department believes it is appropriate for each agency to become more involved in planning and funding alternative fuel vehicle acquisition to meet the specific agency requirement. The Department retains the authority, however, to allow agencies with aggressive acquisition plans to make up for those agencies unable to meet their percentage goals, so long as the aggregate percentage acquired by all Federal fleets is at least equal to the required percentage.

Section 303 of the Energy Policy Act authorizes appropriations to the Department for the incremental cost of alternative fuel vehicles through fiscal year 1998. The Department is working closely with affected agencies to use 1996 as a transition year to gradually shift the funding responsibility to the individual agencies. The experience with the U.S. Postal Service and the Defense Department indicate that Department of Energy leadership and coordination, and some funding, is still needed to ensure meeting all Energy Policy Act requirements. The Department's FY 1996 request of $20 million will allow the Department to fulfill this role and ensure compliance with the Congressional requirement that 25 percent of new acquisitions be alternative fuel vehicles. The Department estimates the requirement to be about 12,500 alternative fuel vehicles. The Department's cost share will be about 50 percent of the incremental funding required.

Without a gradual transition of incremental funding responsibility to the individual agencies, many agencies would have difficulty in meeting the 1996 acquisition requirements. Analysis is currently underway at DOE and the Office of Management and Budget to determine an appropriate transition approach. Options being considered for funding the incremental costs of alternative fuel vehicles include: (1) each agency funds a percentage, which increases annually, with DOE funding the remainder; (2) each agency funds acquisitions up to its percentage requirement with DOE funding acquisitions beyond the agency's requirement, thus rewarding aggressive acquisition plans; and (3) averaging incremental costs for alternative fuel vehicles across the entire Federal vehicle acquisition, providing a built in mechanism for increasing agency cost share.

Question: Funding increases are requested for providing technical assistance to Federal agencies on alternatively fueled vehicles through promotion and education, and for developing regulations on these vehicles. Why do you need to do all that and buy the vehicles too? (budget p.441, 442)

Answer: In order that Federal agency fleet managers and operators, located in regional field offices and military installations nationwide, can determine the most appropriate alternative fuel vehicle purchases for their specific mission and function, the Department of Energy must provide information on vehicle type, performance characteristics, cost, and availability, as well as current and projected fuel availability in their regions. This is accomplished through regional workshops designed specifically for Federal fleet managers and operators and presented by alternative fuel vehicle experts. Working closely with the General Services Administration (GSA), automakers, conversion companies, and fuel providers, information is updated frequently and disseminated to the Federal fleet managers and operators.

Regulatory development for the Federal fleet is required to ensure compliance with the Energy Policy Act requirements. The Department is required to work with GSA to track and report on the use of alternative fuels in dual fuel vehicles. Also required is a rulemaking to require Federal agencies to use domestically produced alternative fuel at least 50 percent of the time.

The Department works closely with the Federal agencies to accomplish the Energy Policy Act requirements without regulation when possible. Funding for education and technical assistance is a low-cost, high-return investment in helping meet those requirements.

Energy Policy Act

Question: $5,980,000 is requested for implementing Title V of the Energy Policy Act of 1992 (EPACT), as compared with $2,653,000 in fiscal year 1995 and $1,140,000 in fiscal year 1994. What are you required to do under Title V of EPACT?

Answer: Title V of the Energy Policy Act builds on the Federal programs established by Title III and the non-Federal programs established by Title IV by adding programs that will increase the use of alternative fuels in transportation.

Title V contains several mandates for specific fleets to acquire alternative fuel vehicles, but also requires the Department to obtain voluntary commitments to expand the use of alternative fuel vehicles without regulation. Title V establishes aggressive goals for the use of replacement fuels in transportation, but also requires the Department to determine if those goals are feasible. Following is a short summary of the specific requirements under Title V.

Sec. 501 - Alternative fuel providers are required to begin acquiring alternative fuel vehicles starting in model year 1996. The Department must implement this program through a rulemaking.

Sec. 502 - The Department must establish a program or programs to achieve the use of domestic replacement fuels to the maximum extent practicable. In addition, the Department must examine the feasibility of attaining the goals of 10 percent replacement fuel use by 2000 and 30 percent by 2010.

Sec. 503 - The Department must study and report on the number of alternative fuel vehicles and their impact on fuel use and the environment. This activity is assigned to the Energy Information Administration which has a separate budget request.

Sec. 504 - The Department is to examine and modify by rulemaking if necessary the goals established in Section 502. The Department is given the authority to establish additional programs that are needed to meet the replacement fuel goals.

Sec. 505 - The Department is to obtain voluntary commitments from fuel suppliers, vehicle suppliers, and fleet owners/operators to help achieve the goals established in Section 502.

Sec. 506 - The Department is to prepare and publish a technical and policy analysis on the replacement fuel goals.

Sec. 507 - State fleets are required to begin acquiring alternative fuel vehicles starting in model year 1996. The Department must implement this program through a rulemaking. The Department must also study, through a rulemaking process, whether to extend this requirement to private and local government fleets.

Sec. 508 - The Department must establish by rule a credit trading program to provide flexibility for fleets required to acquire alternative fuel vehicles.

The Department's implementation of Title V has been successful. To help implement the Sec. 505 voluntary commitments program and support implementation of other parts of Title V, the Department has created the Clean Cities program to form critical partnerships with fuel suppliers, automakers, local government, and fleet operators. Clean Cities also provides a supporting network for the Department's alternative fuel programs under Titles III and IV. The required rulemakings under Section 501 and 507(o) have been proposed. The first report required by Section 502(b) has been drafted and will be released soon. The 1996 budget request covers the continuation and expected growth in these programs.

Question: Please provide a side by side comparison of funding for each of the projects in this category in fiscal year 1994, 1995, and 1996.

Answer: As estimated breakout by section for Title V of the Energy Policy Act is provided below:

Energy Policy Act Alternative Fuel Budget
Estimated Breakout by Section
Title V

Energy Policy Act Title V	FY 1994 Approp.	FY 1995 Approp.	FY 1996 Request
Sec. 501 - Alternative Fuel Providers Mandate - Analysis and other support for rulemaking implementing the fleet requirement for alternative fuel providers to acquire alternative fuel vehicles.	$ 200	$ 250	$ 250
Sec. 502, 504, 506 - Replacement Fuels - Analysis and program support for assessing the replacement fuel goals in Sec. 502(b) and designing a replacement fuels program described in Sec. 502(a). Analysis and report preparation for reports on replacement fuels issues required by Sec. 504 and Sec. 506.	200	500	450

Energy Policy Act Title V	FY 1994 Approp.	FY 1995 Approp.	FY 1996 Request
Sec. 505 - Voluntary Commitments - Use Clean Cities program to obtain voluntary commitments from auto manufacturers, fuel suppliers, and fleet operators to produce, provide fuel for and use alternative fuel vehicles. Voluntary commitments help reduce the need for regulations and improve compliance when regulations are required.	481	1,553	3,081
Sec. 507 - State, Private, and Local Fleet Mandates - Analysis and other support for rulemaking implementing the fleet requirement in Sec. 507(o) for States to acquire alternative fuel vehicles. Analysis and other support for rulemaking to study the fleet requirement for private and local government fleets to acquire alternative fuel vehicles. A private and local fleet mandate is contingent on determinations made during the rulemaking process that the program is necessary.	259	350	399
Sec. 508 - AFV Credit Program - Analysis and other support for rulemaking implementing the Credit trading program in Sec. 508 that gives flexibility in compliance to fleets required to acquire alternative fuel vehicles.	0	0	300

Energy Policy Act Title V	FY 1994 Approp.	FY 1995 Approp.	FY 1996 Request
Sec. 502, 504 - VMT Program - As part of the effort to assess the replacement fuels goals and implement a program to achieve them, study the role for efficiency improvements and programs to reduce vehicle miles traveled. Pilot program in 1996 will be coordinated with Clean Cities and communities seeking compliance with the Clean Air Act and the Intermodal Surface Transportation Efficiency Act.	0	0	1,500
Total Title V	$1,140	$2,653	$5,980

Question: If funding for Title V activities were held to the fiscal year 1995 level in fiscal year 1996, how would you adjust the program?

Answer: The Title V programs are among the most important of the Energy Policy Act programs established by Congress. The FY 1996 request was prepared in anticipation of continued growth in the Department's efforts to comply with the Congressional requirements. Funding at the FY 1995 level would require reductions in at least three important areas:

(1) Regulations covering the alternative fuel providers and State fleets will be completed and must be implemented in 1996. This includes implementation of the Credit Trading program (Sec. 508) that provides great flexibility to fleets in complying with the requirements. Reduced support for implementation could mean slower processing of applications for exemptions from the fleet requirements and applications for credit trading.

(2) The replacement fuels programs, established under Section 502, will require significant analysis and support. As part of this effort, an increase in FY 1996 is requested to study the role for efficiency improvements and programs to reduce vehicle miles traveled. A pilot program in FY 1996 will be coordinated with Clean Cities communities seeking compliance with the Clean Air Act and the Intermodal Surface Transportation Efficiency Act. Reduced funding would slow the Department's efforts to assess the replacement fuels goals and develop programs to reduce the use of oil in transportation.

(3) The Voluntary Commitments program (Sec. 505) is being implemented through the Clean Cities program. The FY 1996 budget request to

support the Clean Cities program reflects an increase to fund the expansion of the national program, in terms of both the number of participating cities and the level of activity within designated Clean Cities. Holding funding to maintenance levels would not allow the program to keep pace with the growing nationwide interest in alternative fuels and vehicles expressed by communities seeking to join and advance the Clean Cities initiative. Limited funding would limit the training, information, and technical assistance that DOE provides to cities, such as guidebooks, meeting facilitation, funding strategies, and partnership building. Also, as new cities enter the program (35 current; 15-20 additional planned), resources would become diluted. Finally, reduced funding will not allow DOE to respond to Clean Cities recommendations that direct funding for coordination/management could significantly improve the "catalytic" function of the program, enabling greater leveraging of private resources.

Question: $35,330,000 is requested for complying with Title VI of EPACT and with the Zero Emission Vehicle (ZEV) mandate in California, as compared with $29,526,000 in fiscal year 1995 and $23,345,000 in fiscal year 1994. What are you required to do under Title VI?

Answer: The funding levels in question relate to the deployment of alternative fuel vehicles and do not apply only to Title VI of the Energy Policy Act. The funding level requested in FY 1996 for Title VI activities is $ 2.5 million. This compares with the $ 1.98 million authorized in FY 1995 for this activity and the $ 1.936 million authorized for Electric Vehicle Field Operations in FY 1994. Title VI requires the Department to conduct an Electric Motor Vehicle Commercial Demonstration Program, and an Electric Motor Vehicle Infrastructure and Support Systems Demonstration Program. Title VI also requires the Department to prepare reports to the Congress on: (1) methods for encouraging the purchase and use of electric motor vehicles, and (2) the results of a study to determine the means by which electric utilities may invest in, own, sell, lease, service, or recharge batteries used to power electric motor vehicles.

Question: Please explain the zero emission vehicle mandate in California.

Answer: The California zero emission vehicle mandate requires that beginning in 1998, 2 percent of all new vehicles offered for sale by the seven major automobile manufacturers (Chrysler, Ford, General Motors, Nissan, Toyota, Honda and Mazda) must be classified as zero emission. At the present time only battery powered cars comply with the zero emission requirement. The mandate requires a phased increase in zero emission vehicle sales from the initial 2 percent in 1998, to 5 percent in 2001, and 10 percent in 2003 and beyond.

Question: What responsibility do you have with respect to the ZEV requirement in California?

Answer: The Department of Energy does not have any direct responsibility for implementing the California zero emission mandate. However, the Department has signed a cooperative agreement with the automobile industry to assist it in the development of advanced battery technologies that will allow it to provide vehicles that are publicly acceptable in response to the mandate. The development is 50 percent cost shared by industry.

Question: Please provide a side-by-side comparison of funding for each of the Title VI projects in fiscal years 1994, 1995, and 1996.

Answer: A tabular breakdown of the Title VI program elements follows:

Title VI Program Elements
(dollars in millions)

Program Element	FY 1994 Approp.	FY 1995 Approp.	FY 1996 Request
Program Management	$0.19	$0.25	$0.25
Vehicle Testing and Purchases	1.69*	1.33	1.85
Data Collection	0.47	0.20	0.20
Training	0.10	0.20	0.20

*Includes funds returned to the program from repaid loan guarantees

Question: If funding for Title VI activities were held to the fiscal year 1995 level in fiscal year 1996, how would you adjust the program?

Answer: If funding for Title VI activities were held to the fiscal year 1995 level, the testing and purchase of electric vehicles would be reduced to the fiscal year 1995 levels.

Materials Technology

Question: A new program, as part of the partnership for new generation vehicles, is proposed which involves $2 million for development of ceramic materials for transportation fuel cells. Please explain this project. (budget p. 452)

Answer: This is not a new program, but a continuation of the effort to produce advanced materials for vehicle propulsion systems.

Beginning in FY 1996, we will explore the electrical and electrochemical properties of ceramic materials, in addition to developing the improved structural properties needed for advanced heat engines. Lightweight ceramic materials, including carbides, carbons, and glasses, are key to enabling batteries and fuel cells to meet lifetime and performance objectives of both electric and hybrid vehicle propulsion systems.

Question: What would you do with the $2 million in fiscal year 1996?

Answer: In FY 1996, our emphasis is to develop engineered ceramic materials, including hydrides, carbons, and glasses with potential for stable and volumetrically efficient hydrogen storage for fuel cells. Another prime concern is stabilizing carbon nanofoam materials for lithium intercalation in batteries. Fuel cell catalysts, including cost-effective ceramic porphyrin materials, will also be optimized to bind oxygen atoms more effectively and to bond to sol-gel carbon nanofoam substrates for long-term stability. Titania-based sol-gel catalysts with highly dispersed platinum loading will also be fabricated and evaluated for catalytic properties. These sol-gel structures are expected to be useful as bipolar cell separation plates as well. Additionally, solid-oxide ceramic electrolytes with operating temperatures below 500°C will be developed for application in advanced transportation systems.

Question: What are the outyear costs?

Answer: Based on an appropriation of $2 million in FY 1996, the projected outyear costs are:

FY 1997	$ 5,000,000
FY 1998	$ 8,000,000
FY 1999	$10,000,000
FY 2000	$ 8,000,000

Partnership for a New Generation of Vehicles

Question: To what extent are other parts of the Department or other Federal agencies funding this initiative? Please provide details for the record.

Answer: In total, there are eight Federal departments or agencies contributing funds to the Partnership for a New Generation of Vehicles (PNGV). Within the Department of Energy (DOE), Defense Programs and Energy Research are funding the PNGV initiative, in addition to Energy Efficiency and Renewable Energy (EE).

The following tables show the specific funding levels for each of the eight Federal departments and agencies and the funding break-out by organization within DOE for FY 1995 and FY 1996.

U.S. Department of Energy FY 1995 Appropriations for PNGV (Dollars in Millions)

Technical Area	EE			DP	ER	TOTAL
	OTT	OIT	OTFA			
1. Lightweight Materials	$29.14	$4.17		$11.89	$0.74	**$45.94**
2. Energy Conversion	70.47					**70.47**
3. Energy Storage	0.47					**0.47**
4. Efficient Electrical Systems						
5. Exhaust Energy Recovery					1.04	**1.04**
6. Analysis and Design Methods				3.71		**3.71**
7. Reduction of Mechanical Losses						
8. Aero and Rolling Resistance				0.78		**0.78**
9. Advanced Manufacturing		5.81		14.97	1.92	**22.70**
10. Improved Internal Combustion Technology	3.00			4.04		**7.04**
11. Emission Control				3.78		**3.78**
12. Fuel Preparation, Delivery, and Storage						
13. Hotel Loads				0.50		**0.50**
14. Crashworthiness and Occupant Protection						
Creative R&D with Suppliers						
TOTAL	**$103.08**	**$9.98**	**$0.0**	**$39.67**	**$3.70**	**$156.43**

4/26/95

DOE's PNGV Congressional Budget Request for FY 1996
(Dollars in Millions)

Technical Area	EE			DP	ER	Total
	OTT	OIT	OTFA			
1 Lightweight Materials	$34.48	$12.70		$9.00	$4.70	$60.88
2 Energy Conversion						
- hybrid	56.33				3.00	59.33
-fuel cells	42.23				3.00	45.23
-gas turbine & 4SDI	12.36				4.00	16.36
3 Energy Storage	9.65			3.00	1.80	14.45
4 Efficient Electrical Systems				0.50	0.20	0.70
5 Exhaust Energy Recovery						
6 Analysis and Design Methods				4.10		4.10
7 Reduction of Mechanical Losses						
8 Aero and Rolling Improvements				0.70		0.70
9 Advanced Manufacturing				14.90	4.00	18.90
10 Improved Internal Combustion Tech.	6.00			10.20		16.20
11 Emission Control				8.20	2.00	10.20
12 Fuel Preparation, Delivery & Storage						
13 Hotel Loads						
14 Crashworthiness & Occupant Protection						
Creative R&D with Suppliers			2.00			2.00
Total	$161.05	$12.70	$2.00	$50.60	$22.70	$249.05

4/26/95

PNGV-Related FY 1995 Appropriations
By Technical Area and Agency
(Dollars in Millions)

Technical Area / Agency	DOC*	DOD**	DOE	DOI	DOT***	EPA****	NASA	NSF	TOTAL
1. Lightweight Materials	$6.83	$7.03	$45.94	$0.50				$19.24	**$79.54**
2. Energy Conversion			70.47			2.75		0.85	**74.07**
3. Energy Storage	0.04		0.47			2.00		2.69	**5.20**
4. Efficient Electrical Systems		1.20					1.00	15.41	**17.61**
5. Exhaust Energy Recovery			1.04				0.20		**1.24**
6. Analysis and Design Methods	1.50	1.98	3.71				2.20	1.85	**11.24**
7. Reduction of Mechanical Losses	0.25							1.25	**1.50**
8. Aero and Rolling Improvements			0.78						**0.78**
9. Advanced Manufacturing	10.46	2.75	22.70					4.61	**40.52**
10. Improved Internal Combustion Tech	0.58	11.02	7.04			2.90	0.25	3.02	**24.81**
11. Emission Control			3.78				1.35	2.07	**7.20**
12. Fuel Preparation, Delivery & Storage								0.15	**0.15**
13. Hotel Loads			0.50					2.81	**3.31**
14. Crashworthiness & Occupant Protection								0.14	**0.14**
TOTAL	**$19.66**	**$23.98**	**$156.43**	**$0.50**	**$0.0**	**$7.65**	**$5.00**	**$54.09**	**$267.31**

* In addition to the base of $19.7 million, DOC throughout its NIST/ATP program has selected relevant projects with requested funding of $30.1 million. Contracts have not yet been reached on these selected proposals.

** DOD numbers are based on program personnel contact; still being worked within DOD with budget personnel and due to get back to me and I believe will also contact OMB directly

*** Numbers indicated in table are specific to PNGV and identified as such. DOT program personnel indicate that an additional $20 million each year in R&D is related to the PNGV with dual purpose; in FY96, $1 million of the $20 million will be targeted specifically for PNGV

**** EPA numbers were verified but there is still discussion; EPA budget personnel will contact OMB directly

4/26/95

PNGV Congressional Budget Request for FY 1996
By Technical Area and Agency
(Dollars in Millions)

Technical Area / Agency	DOC**	DOD***	DOE	DOI	DOT	EPA	NASA	NSF	TOTAL
1. Lightweight Materials	$4.21	$6.30	$60.88	$2.50				$20.21	**$94.10**
2. Energy Conversion *		6.60	120.92			10.50	0.50	0.89	**139.41**
3. Energy Storage	0.03	2.30	14.45			2.00		2.82	**21.60**
4. Efficient Electrical Systems		2.89	0.70				2.00	16.18	**21.77**
5. Exhaust Energy Recovery							0.30		**0.30**
6. Analysis and Design Methods	1.50	8.30	4.10		5.30		3.00	1.94	**24.14**
7. Reduction of Mechanical Losses	0.45	1.00						1.31	**2.76**
8. Aero and Rolling Improvements		0.55	0.70						**1.25**
9. Advanced Manufacturing	2.38	3.75	18.90					4.84	**29.87**
10. Improved Internal Combustion Tech	0.43	8.56	16.20				0.25	3.17	**28.61**
11. Emission Control			10.20				0.95	2.18	**13.33**
12. Fuel Preparation, Delivery & Storage								0.16	**0.16**
13. Hotel Loads								2.95	**2.95**
14. Crashworthiness & Occupant Protection		2.18						0.15	**2.33**
Creative R&D with Suppliers			2.00						**2.00**
TOTAL	**$9.00**	**$42.43**	**$249.05**	**$2.50**	**$5.30**	**$12.50**	**$7.00**	**$56.80**	**$384.58**

* Includes hybrid, fuel cells, gas turbine, & 4-stroke direct injection technologies

** Additional DOC ATP solicitations in FY96 are expected but until selection and negotiation occur these additional PNGV-related amounts can not be specified

*** Additional DOD/ARPA/TRP solicitations in FY96 are expected but until selection and negotiation occur these additional PNGV-related amounts can not be specified

4/26/95

Question: How many projects are involved in the energy conservation budget?·

Answer: Within energy conservation, the PNGV initiative is supported by three program offices: the Office of Transportation Technologies (OTT), the Office of Industrial Technologies (OIT), and the Office of Technical and Financial Assistance (OTFA).

The FY 1996 budget request supports four technical project areas that fall within OTT and OIT. Industry identified the critical technical project areas which are necessary to achieve the goals of the Partnership. In addition, OTFA supports an effort that focuses on creative research and development with suppliers by providing a cost-effective and proven process for evaluating and developing technologies from independent inventors and small businesses in an attempt to increase the commercialization rate of transportation technologies.

The EE's project areas are identified as follows:

EE's PNGV FY 1996 Congressional Budget Request by Technical Area

Technical Project Area	OTT	OIT	OTFA
Lightweight Materials	X	X	
Energy Conversion	X		
Energy Storage	X		
Improved Internal Combustion	X		
Project Area	**OTT**	**OIT**	**OTFA**
Creative R&D with Suppliers			X

Question: For the record please provide a priority listing of all the various projects in the PNGV initiative, along with fiscal year 1995, 1996, and 1997 cost estimates by project. Also note the budget subactivity for each project.

Answer: Government and industry have agreed on the technical areas requiring technological advances to achieve the PNGV targets; and industry has indicated priorities within those technical areas. DOE projects address only the four areas identified as highest priority: lightweight materials, energy conversion (including energy storage), improved internal combustion, and advanced manufacturing. These are high-risk technology development efforts which are not market driven to warrant industry investment but which are most beneficial since they have the potential for "the most bang for the buck." DOE has given these four areas high priority (at the expense of other areas) because of the PNGV priority given to them and, also, because of the potential dramatic petroleum savings and economic and environmental benefits to the nation, as applicable to the overall DOE mission and strategies. A priority determination has not been made between these areas because they are all of highest priority.

These EE PNGV technical project areas are listed below with the associated funding levels and subactivities.

EE's PNGV Technical Project Areas
(dollars in millions)

Technical Project Areas	FY 1995	FY 1996	FY 1997 Estimate
Lightweight Materials OTT: Materials Tech -Propulsion Systems Materials -Vehicle Systems Materials OIT: Industrial Wastes -Waste Utilization & Conversion OIT: Materials & Metals Processing -Metals Initiative -Process Electrolysis -Foundries & Glass	$33.3	$47.2	It is estimated that in FY 97 approximately $214.6 M will be required to support EE's portion of the PNGV initiative. The exact PNGV funding level and projects for FY 1997 will be determined as part of the FY 1997 budget process within the Department. During this process, program priorities and funding levels are carefully examined and the most beneficial programs are supported at a funding level appropriate to meet the goals of these high priority programs.
Energy Conversion OTT: Electric & Hybrid Prop. Dev. -Fuel Cells -Systems Development OTT: Heat Engine Development -Light Duty Engine Technologies	$70.5	$110.9	
Energy Storage OTT: Electric & Hybrid Prop. Dev. -Battery Development	$0.5	$9.6	
Improved Internal Combustion OTT: Heat Engine Development -Light Duty Engine Development	$3.0	$6.0	
Advanced Manufacturing OIT: Materials & Metals Processing -Metals Initiative -Process Electrolysis -Foundries & Glass OIT: Industrial Wastes -Waste Utilization & Conversion	$5.8	---	
TOTAL	$113.1	$173.7	

Although it is not identified as a "technical area," the OTFA project supports all of the highest priority areas covered above. This project will solicit creative ideas and proposals from the general public, evaluate these ideas in an expedited fashion, and provide funding for the most promising concepts and inventions. The following table shows the funding level and subactivities for this PNGV project:

Project Area	FY 1995	FY 1996	FY 1997 Estimate
Creative R&D with Suppliers OTFA: Inventions & Innovations -Inventions Evaluations -Inventor Assistance -Innovative Concepts -Tech Assessment & Transfer	---	$2.0	(See explanation above)

Heat Engines

Question: The total budget for heat engines remains about the same in fiscal year 1996 as in fiscal year 1995. Are any heat engine projects being terminated, deferred or downsized in fiscal year 1996? If so, which ones and please provide details for the record explaining the original and the current plan.

Answer: The FY 1996 budget request for Heat Engine Technologies is $24,066, up from $18,208 in FY 1995. No projects are being terminated or stretched out compared to the FY 1995 level of activity. All of the increase is for Light Duty Engine Technologies, where accelerated activity is critical to meeting the PNGV goals and technical requirements. Specifically,

- +$1.4 million (19%) for Turbine Technologies, mainly to initiate R&D for the further improvement of the Hybrid Vehicle Turbine Engine and its adaptation as one of the candidate engines for the PNGV, with a goal of three times the fuel efficiency of today's comparable vehicle;
- +$3.5 million (117%) for Automotive Piston Engine Technologies, mainly to initiate R&D focused on the four stroke, direct injection (4SDI) piston engine candidates for the PNGV (both spark and compression ignited);
- +$1.0 million (50%) for Combustion and Emissions Applied R&D, to complement the above engine research in this specialty. This R&D cuts across all engine types and sizes, and alternative fuels, and uses the best talent from the nation's universities.

Electric and Hybrid Propulsion

Question: Funding for advanced technologies for high-power energy storage devices increases from $470,000 in fiscal year 1995 to $9,650,000 in fiscal year 1996. How do you justify this huge funding increase? (budget p. 481)

Answer: The development of a satisfactory high power energy storage device has been identified by industry as a critical step in the successful development of both hybrid and fuel cell powered vehicles, which are key elements of the Partnership for a New Generation of Vehicles. The specifications for these high power devices are significantly different from the batteries that are currently being developed for electric vehicles by the United States Advanced Battery Consortium (USABC). The only work that the Department has supported thus far on high power devices are small research projects on ultracapacitors. In fiscal year 1995, the work on ultracapacitors will be expanded and existing battery systems tested in DOE laboratories to characterize the state of the art. The USABC will issue a procurement in the latter part of fiscal year 1995 for a contract, or contracts, with the battery industry to develop a high power battery that will satisfy the unique demands of hybrid vehicle systems. The contracts will be similar in size and scope with those currently being cost shared by DOE and the USABC for the development of batteries for electric vehicles.

Question: How will this funding be distributed among the various national laboratories and industry participants?

Answer: The industry has agreed that the USABC will take the lead in the effort to develop high power batteries and ultracapacitors for the PNGV initiative. Following the example of the funding flow for the development of electric vehicle batteries under the USABC, approximately 85 percent of the funds will go to battery developers and the remaining 15 percent to DOE laboratories for testing and research directly supporting the contracts.

Question: How many contracts do you plan to let with these funds?

Answer: The exact number of contracts cannot be determined until the proposals are received from the solicitation and negotiations completed. However, based on the programs currently funded by the USABC, it is expected that this level of funding would be sufficient to initiate from 2 to 3 contracts with industrial developers, plus support from one or more national laboratory.

Question: If funding for this project were cut in half, how would you change the funding distribution and how many fewer contracts would be let?

Answer: If the funding were cut in half, one battery development contract would be initiated and the ongoing work on ultracapacitors would be continued at its current level. The distribution of funds between the industry developers and the laboratories would remain approximately the same.

Question: How much of the $12 million requested for proton exchange membrane (PEM) fuel cell development for light duty vehicles is for assembling and testing a 30-kilowatt fuel cell system? (budget p. 483--$10 million in FY 1995)

Answer: Most of the $12 million is being used for engineering the fuel cell reformer, reformer catalysts, burner, fuel cell stack, electrodes, membrane catalysts, bipolar plates, and membrane assembly, and for designing and developing a more efficient compressor and heat exchanger. About $1 million would be used to assemble and test the fuel cell system.

Question: How does the PEM fuel cell work?

Answer: A fuel cell is an electrochemical device that converts the chemical energy of a fuel directly into electrical energy. The principal components of a fuel cell are two electrodes, one for the fuel (anode) and one for the oxidant (cathode), and a conductive electrolyte in between. Because the operating conditions are largely determined by the electrolyte, fuel cells are classified by the type of electrolyte used. The proton-exchange-membrane (PEM) fuel cell uses a proton-conducting polymer membrane as the electrolyte.

At the anode (the hydrogen electrode), hydrogen ions and electrons are formed. The hydrogen ions then travel through the electrolyte to the cathode (the oxygen electrode). Simultaneously, the electrons move through an external circuit to a load and then to the cathode. At the cathode, the oxygen, hydrogen ions, and electrons combine to form water.

The fuel for fuel cells is hydrogen. Hydrogen can be generated from methanol, ethanol, natural gas, propane, and other hydrocarbon fuels. Two fueling options are possible: (1) stored hydrogen can be provided directly to the fuel cell as a pure gas; and (2) methanol, ethanol, or natural gas can be processed (reformed) in an external reformer to provide hydrogen-rich gas for consumption in a fuel cell. Other fuel cells are being developed which are still in the early stages of development: (1) high temperature fuel cells which can reform hydrocarbon fuels internally; and (2) direct methanol fuel cells, where methanol is provided directly to the fuel cell and electrochemically oxidized there.

Question: Who is the industry cooperator and why is there a cost share of only 20 percent?

Answer: The industry partner is a team led by General Motors with the following subcontractors: Los Alamos National Laboratory, Ballard Power Systems, Dow Chemical Company, and DuPont. The cost share of 20 percent is standard for work that is in the early stage of development. When the fuel cell technology matures and approaches commercial viability, DOE will ask industry to increase its share in future phases of the program.

Question: How is that PEM fuel cell project different from your hydrogen PEM fuel cell system for which you propose to increase funding from $5,983,000 in fiscal year 1995 to $16,228,000 in fiscal year 1996? (budget p. 484)

Answer: This PEM fuel cell project focuses on development of a system that uses a methanol reformer as the source of hydrogen, as opposed to on-board hydrogen storage. Using methanol as a fuel allows for ease of refueling and it fits an existing infrastructure based on liquid fuels. The increase in funding for the hydrogen PEM is to fully fund the contracts with the two automobile companies, Ford and Chrysler, to develop an on-board hydrogen PEM system. The on-board storage of hydrogen produces a truly zero emission vehicle, but additional research is needed to solve the handling and storage of hydrogen and the infrastructure problems associated with this type of fuel.

The FY 1996 requested funding level supports the continued development of fuel cell technology and aligns the development goals of fuel cell technology with the PNGV goals. Increased funding from FY 1995 is necessary to maintain schedules and contain risks within acceptable levels as projects progress into the hardware development phase to achieve the concept and production prototype vehicles goals in the required times for overall program success.

Question: Who are the industry cooperators and why is the cost share only 20%?

Answer: There are two industry teams: Ford Motor Company and Pentastar Electronics, Inc. (a Chrysler company). The team led by Pentastar consists of: AlliedSignal Aerospace, AlliedSignal Research & Technology, AlliedSignal Automotive, and Chrysler Liberty. The team led by Ford consists of: International Fuel Cells, Energy Partners, H-Power Corp., Tecogen, Mechanical Technology, Inc., Directed Technologies, Inc., BOC Gases, Air Products and Chemicals, Inc., Electrolyser Corp., Praxair, Inc., EDO Fiber Sciences, and Aerotech. The cost share of 20 percent is standard for work that is in the early stage of development. When the fuel cell technology matures and approaches commercial viability, DOE will ask industry to increase its share in future phases of the program.

Question: There is yet another PEM fuel cell effort on pages 487 and 488 of your budget for which $9.2 million is requested, as compared with $1.5 million in fiscal year 1995. How is this program different from the preceding two PEM programs?

Answer: The PEM effort included in this area is more basic research-oriented in specific technology problem areas, whereas the GM, Ford, and Pentastar contracts focus on complete vehicle system development. This research is basic or pre-competitive research and development. It is essential to accelerate the research into new materials, catalysts, membrane and electrode development, and reformer and compressor improvements, which are needed to support industry identified projects. This pre-competitive R&D is being executed through the National Fuel Cell Alliance. This government/industry alliance includes all stakeholders; namely, domestic automakers, component suppliers, fuel cell developers, national laboratories, universities, and the fuels industry. Under the Alliance, the automotive industry, in conjunction with DOE, establishes program policies, identifies pre-competitive R&D priorities, sets intellectual property guidance, and reviews technical progress. Each of the "Big Three" U.S. automakers is pursuing a different technical approach a under cost-shared research project with DOE using its own vehicle design, data, and analysis methods. A key additional element of the Alliance is the coordination of pre-competitive fuel cell R&D by DOE. This research is intended to resolve fundamental problems and issues associated with fuel cells and ancillary components that apply to a number of different fuel cell propulsion systems. Each automaker team and all other interested private sector parties will have access to the technology and products resulting from pre-competitive R&D.

This approach has significant benefits for both DOE and America's automakers. By sharing results, government and industry will be able to leverage research dollars; but, by maintaining their own independent vehicle integration teams, the automakers will be able to pursue the approaches which they believe provide the greatest payoffs. Collectively, the National Fuel Cell Alliance provides the best opportunity for meeting the very real threat of foreign domination/leadership in the development and deployment of fuel cell technology. This will ensure that America develops the technological superiority to remain competitive in the global marketplace.

Question: What work are you doing in the area of fuel cells for locomotives and why do you need $1 million to continue this effort in fiscal year 1996? (budget p. 485)

Answer: The Department of Energy has entered into a multi-phased cooperative program with the South Coast Air Quality Management District and other California agencies to develop fuel cell-powered locomotives. The objective of the program is to develop a commercially viable alternative to conventional diesel locomotives. The locomotive fuel cell power system includes the fuel storage, fuel processor, fuel cell stack, and all the controls and ancillary equipment required to replace the diesel generator set used in a conventional locomotive.

The fuel cell locomotive request for proposal (RFP) for Phase I was released by DOE's Nevada Operations Office on January 31, 1995, with a response date of April 5, 1995. Phase I will be the design phase lasting 18 months involving one or two contractor teams to be led by a locomotive manufacturer and include a fuel cell developer. Phase I tasks include the evaluation of competing technologies through trade-off studies and life-cycle cost analyses, the development of a preliminary design of a 1-megawatt fuel cell test locomotive, technology readiness testing of critical components, and development of a conceptual design of a full-scale fuel cell locomotive (2 to 4.5 megawatt).

DOE plans a separate solicitation for Phase II, which will be the demonstration phase lasting 36 months. One of the contractor teams will be chosen to fabricate the 1-megawatt test locomotive and conduct testing over a range of duty cycles to obtain performance and cost data. Other Phase II tasks include updating the conceptual design of the full-scale fuel cell locomotive, updating life cycle cost estimates, and preparing a preliminary commercialization plan.

Systems Development

Question: Hybrid propulsion system activities increase from $16,911,000 in fiscal year 1994 to $35,447,000 in fiscal year 1995 and are proposed to increase to $52,575,000 in fiscal year 1996. (budget p. 491, 492) What is a hybrid propulsion system?

Answer: A hybrid propulsion system consists of a combination of a heat engine and electric drive. The electric drive enables the recovery of energy normally lost during braking, and can mechanically decouple the engine from the wheels, eliminating the need for idling while the vehicle is stopped. The heat engine will use liquid or gaseous fuels providing the range and refueling capability of conventional vehicles.

Question: What would you do with the large increase in funding requested for fiscal year 1996?

Answer: In fiscal year 1996, $39.5 million is required to continue the contracts with General Motors and Ford. Work on key enabling technologies will require $5.5 million, including an inter-agency project for the development the Power Electronic Building Block (PEBB), a very low-cost electric power control technology. This work will result in products that will have broad applications in the commercial, industrial and defense sectors. Other enabling technologies that will be supported include high power semiconductor devices, soft switching control systems, and thermal management systems. The remaining $10.6 million will fund a third hybrid development contract to increase our industries competitive position in the face of strong international competition for this technology.

Question: Why do you want to add a third development team to this effort?

Answer: The successful development of a hybrid propulsion system is critical to the achievement of the 80 miles per gallon fuel economy goal established by the Partnership for a New Generation of Vehicles (PNGV). The addition of a third contract will allow more alternatives to be evaluated, and will enable all three major domestic automobile manufacturers to focus their resources on this important technology with some government support. Also, the industry will work collectively, sharing resources and knowledge in the development of pre-competitive enabling technologies that are required in the long-term to make these systems fully cost competitive with conventional vehicles. A successful hybrid propulsion system will capture a large part of the vehicle market, achieving a major part of the DOE efficiency goals for the transportation sector. Timing the market entry of a new vehicle system, ahead of competitors, is critical to maintaining market share. Of the three U.S. manufacturers that are members of the PNGV, one does not currently participate in the hybrid program. This manufacturer represents nearly 14% of the domestic auto sales in a highly competitive market. Each 1% loss of market share to a foreign competitor will increase the trade deficit by $2-3 billion annually and endanger approximately fourteen thousands U.S. jobs.

Question: How much would your funding requirements be lowered if you were to continue only the two ongoing projects in fiscal year 1996?

Answer: Continuing only the two ongoing contracts would reduce the fiscal year 1996 funding by $10.5 million.

Implementation and Deployment

Question: What are you doing with the $500,000 in the fiscal year 1995 budget for student competitions for building alternatively fueled vehicles? (budget p. 496, 497)

Answer: In 1995, the student competitions are being supported by the $500,000 in this program element and by $1,175,000 from the Systems Development program element under Electric and Hybrid Propulsion Development. The funding from the Systems Development program is going to support the 1995 Hybrid Electric Vehicle Challenge sponsored jointly with Chrysler and other corporate sponsors. The $500,000 in this program element is going to support five student vehicle competitions:

- APS Electrics (Arizona Public Service)
- DASH/CARR (DOE Advanced Student Hybrid/Clean Air Road Rally)
- EV Grand Prix
- SAE Formula
- American Tour de Sol

The money is spent primarily for support of the competitions (planning, running, and documenting the results) by Argonne National Laboratory and for prize money to the winning school teams. The student competitions involve planning meetings in advance of the competitions to select participating schools, set guidelines and rules, answer questions, and/or meet with the co-sponsors to determine overall strategy and assignments at the competitions. Running the competitions involves registering the students, inspecting the vehicles for safety, judging the vehicles for performance, testing range and fuel economy, judging written papers and oral presentations, and scoring the schools. Documentation involves sending out full scoring results to all participating schools, writing up reports on the characteristics of the vehicles, and organizing and chairing sessions on student competitions at the annual Society of Automotive Engineers meetings.

Question: How many of these competitions will be held?

Answer: The five competitions supported by this $500,000 will be held as follows in 1995:

- 1995 APS Electrics (March 2-5) Over 30 high school teams will build electric vehicles and compete in a test of design, oral presentation, acceleration, range, and efficiency in Phoenix, Arizona. Private vehicles will also compete in separate events.
- DOE Advanced Student Hybrid Challenge and Clean Air Road Rally (March 27-April 1) Eight student-built hybrid vehicles will compete in six events and then take part in a two-day road rally with other alternative vehicles in the Los Angeles region.
- Second Annual EV Grand Prix (May 4-6) Thirty high schools will build electric vehicles with support from their utilities. Schools will come from six states and will compete for prizes in five events in Richmond, Virginia.
- SAE Formula (May 18-21) Teams that use M-85 in these formula cars most effectively will receive prizes from DOE. The competition will take place at the Pontiac Silverdome parking lot.
- American Tour de Sol (May 20-27) Electric vehicles in five different classes will travel from Waterbury, Connecticut, to Portland, Maine. The efficiency of vehicles will be measured to determine prize winners.

Question: About how many schools participate?

Answer: The number of schools that participate in a given competition is often not known until the competition takes place. Since building an alternative vehicle is very complex and difficult, some student teams spend two semesters working on a vehicle but do not finish it in time for the competition. The APS Electrics took place in early March and 34 high school teams participated. The DASH/CARR took place in early April and eight university teams competed in the hybrid competition and two high schools and four colleges competed in the electric vehicle class of the road rally. The EV Grand Prix is expected to have 30 high school teams compete their electric vehicles. The SAE Formula competition will have about 10 of the 50 schools use methanol and compete for the DOE awards. The American Tour de Sol will have about 50 vehicles. Over half of these have been school vehicles (high schools and colleges) in the past, and the same percentage (25 student vehicles) are expected this year.

Question: How exactly is the $500,000 spent?

Answer: In 1995, the $500,000 will be spent as follows:

$210,000 - DOE Advanced Student Hybrid/Clean Air Road Rally
$100,000 - 1995 American Tour de Sol
$100,000 - Prefinancing of 1996 American Tour de Sol
$ 25,000 - SAE Formula
$ 50,000 - Support for four EV Competitions (APS Electrics, EV Grand prix, ElectraChallenge, Florida SunDay)
$ 15,000 - Assistance to Historic Black Colleges and Universities to take part in student vehicle competitions

For example, the support for the four electric vehicle competitions involves providing schools with meters that allow the measurement of vehicle efficiency, sending Argonne National Laboratory staff to help conduct the safety inspections, writing up the results of the competition, and analyzing the vehicle performance in professional papers.

Question: Why have you requested $1,675,000 to expand this program in fiscal year 1996?

Answer: The requested $1,675,000 is the sum of $500,000 in the FY 1995 budget in this program element and $1,175,000 from the Systems Development program element in the FY 1995 budget. Since this is the same level of funding as last year, there is no expansion of the program. The funding has been combined under this program element to provide greater coordination of the student competition program.

Question: How many more competitions would be involved and how many additional schools would participate?

Answer: The number of major competitions will not grow in FY 1996. The largest amount, $1,100,000, will go to the Future Car Challenge--the follow-on competition to the Hybrid Electric Vehicle (HEV) Challenge. The 1993 HEV Challenge was co-sponsored by Ford. The 1994 HEV Challenge was co-sponsored by Saturn. The 1995 HEV Challenge is being co-sponsored by Chrysler. The "Big Three" automakers have decided to jointly sponsor this hybrid vehicle challenge through the United States Council on Automotive Research (USCAR). The number of schools building and competing hybrid vehicles in 1996 will decline slightly, because the automakers are changing the primary focus of the hybrid competition from education to technology development and testing.

The education element will still exist, but the auto companies have such high regard for the capability and innovation of the university teams, that the companies are expecting the schools to test out many hybrid concepts and provide useful feedback to the industry which will help it in its future planning.

The second largest amount, $330,000, will go to the American Tour de Sol (ATdS) which in 1996 will originate in New York City and travel to Washington, D.C. DOE will add a hybrid challenge component to ATdS to fulfill the obligation to the twelve universities which converted Neons to hybrid operation for the 1995 HEV Challenge. The schools were promised at least two years of competition, pending availability of funds, and this will provide the second year of competition for these schools. The hybrid will be tested for emissions and compete in four other events, as well as take part in the five-day road rally to the Capitol. About 12 new school teams will be competing. Approximately $165,000 will be used to support three separate high school electric vehicle challenges. It is anticipated that 30 additional high school teams will be competing.

$20,000 will be used to support the SAE Formula (with one or two additional schools competing) and the SAE Supermileage competition (about ten additional schools will compete). The remaining $60,000 will be used to support the Clean Air Road Rally in Los Angeles which was so successful in 1995 that over forty alternative fuel vehicles (electric, hybrid, ethanol, propane, natural gas, and hydrogen) took part in a road rally that demonstrated the technology and informed the public about the attributes of alternative fuels.

Question: What is the HTML User Facility Fellowship program and how does it work? (budget p. 497--$500,000 each in fiscal years 1995 and 1996)

Answer: The HTML User Facility Fellowship program is designed to educate, train, and further the advancement of ceramic material research. It is comprised of four types of fellowships: graduate, postdoctoral, faculty, and industrial. The graduate fellowship is aimed at increasing the output of U.S. citizens graduating from U.S. universities with doctorates in advanced ceramic areas of direct interest to the DOE mission and goals. The postdoctoral fellowship funds highly qualified U.S. citizens to conduct research in ongoing DOE research projects. The faculty fellowships provides support for faculty to conduct research in the HTML user centers. The industrial fellowships provide support for industrial researchers to conduct research in the HTML or for HTML staff to conduct research in an industrial laboratory.

Qualified applicants are selected by a review panel comprised of members of the National Institute of Ceramic Engineers and the Ceramic Educational Council or by the HTML Director with assistance from the HTML Fellowship Executive Committee. Fellows are provided a stipend and are appointed to terms of one month to four years.

Why is the Department of Energy involved in this program?

Answer: DOE is involved in this program because the HTML was established specifically to help industry and university students solve their problems by conducting their work in this facility with its expert staff who operate the six user centers. This program provides an opportunity for a researcher to conduct work in this state-of-the-art facility over a prolonged period. It also provides a clear mechanism for helping all sizes of companies access the instrumentation in the HTML to solve their problems with their own staff, which is very desirable.

Utility Sector Programs

Question: What is integrated resource planning and why do you need a 13% increase in funding for this program in fiscal year 1996? (budget p. 509 -- $8,756,000 in '95 and $9,930,000 requested in '96)

Answer: The increase in program funding requested for fiscal year 1996 reflects the tremendous change occurring in the utility industry produced by increasing competition. Increased competition does not diminish the need for utilities and state regulators to plan, but does change the way planning is done and significantly increases its complexity. Requests for assistance in meeting the challenges presented by competition and industry restructuring have increased dramatically over the past year.

Increased funding will be used to support a variety of projects aimed at helping states and utilities adjust resource planning processes and methods to the demands of a restructured and competitive environment. These include state innovation and technical partnerships to address restructuring issues, and the Council for a Competitive Electric Industry, a collaborative effort of the National Association of Regulatory Utility Commissioners and the National Conference of State Legislatures.

The Department of Energy's IRP Program does not engage in resource planning, but rather supports the development of tools and methods that utilities and states can use to improve planning and decision making at the state and utility level. It also gives technical assistance to states who are required by EPACT to undertake IRP. Without some expert assistance, some states feel incapable of doing the job correctly.

Question: Why don't the power companies fund their own planning efforts?

Answer: Power companies do fund their own planning efforts. None of the funds appropriated to the IRP Program are used to support utility resource planning directly. Program funding is used to develop innovative and advanced planning methods, to support regional and national data collection related to IRP and demand-side management (DSM), to evaluate IRP and DSM programs and methods, and to analyze policy issues affecting IRP and DSM implementation. All of these efforts are available to, and directly support, the public in each state. Many utilities have used the products of this work (e.g., our technical reports) in their internal planning processes. Where the results of the work would have broad applicability, the IRP Program has funded joint projects with individual utilities. Utilities with which the Program has worked recently include Public Service Gas & Electric Company in New Jersey, Arizona Public Service Company, New England Electric Service, PacifiCorp, and Central and Southwest Corporation. In addition, the Program is funding a project with the Edison Electric Institute to explore issues related to competition and demand-side management.

Question: How much of this funding goes to the States and how do they use it?

Answer: No set formula is used to allocate funding to States. With the exception of an Integrated Resource Planning Voucher Program ($400,000 FY '95) which provides financial assistance to state agencies and public power utilities for IRP technical assistance, the Program works with state organizations rather than individual states. This approach provides much greater leverage, and allows the states to define the types of work they find most useful. Following is a summary of fiscal year 1995 state-related funding.

- $827,000 through the National Association of Regulatory Utility Commissioners to support the work of the Energy Conservation Committee and the National Council on a Competitive Electric Industry. The Energy Conservation Committee uses the funding to support research projects related to IRP, as well as to sponsor an annual industry-wide IRP conference. Funding for the Council supports technical assistance to state utility commissions and legislatures on restructuring issues.

- $100,000 to the National Council of State Legislatures to support technical assistance for state legislatures on utility issues. This is used to help state legislatures understand the complex technical issues involved in electric deregulation.

- $100,000 to the New England Governors' Conference to support a regional energy planning project managed by the Conference.

- $40,000 to the National Association of State Energy Officials to support work to identify successful state models for promoting energy efficiency in a restructured utility industry.

- $25,000 to the Western Interstate Energy Board to support state agency participation in regional transmission groups in the West.

- $180,000 to the Regulatory Assistance Project to provide approximately 30-40 on-request technical support to state regulatory agencies on issues related to competition and IRP.

The Department anticipates that each of these projects will require funding in fiscal year 1996 at or above fiscal year 1995 levels.

Question: Why is this a federal responsibility?

Answer: The Department considers the application of both the process and the methods of IRP to be exclusively a responsibility of utilities and the states. However, the Energy Policy Act of 1992 creates a clear federal interest and responsibility for IRP, requiring each state utility commission to consider adoption of IRP. The IRP Program's mission is to provide analytical research and information, and to support utility, state, and regional resource planning efforts. As industry restructuring proceeds and competition increases, the challenges faced by utilities and states will increase, at least during a transitional period. New methods for assessing resource choices will be needed, and the need for research and information dissemination on performance-based regulation approaches will increase. New market-based models must be developed to ensure that state, regional and national policy objectives continue to be met in a competitive world.

The federal responsibility is to support and disseminate high quality, unbiased research regarding resource planning processes and methods. No individual state or utility is in a position to fund the work that the program has supported and continues to support. No utility or state has an incentive to support work of broad applicability. Perhaps most important, restructuring and competition are leading to a "regionalization" of many resource planning issues that no state can address by itself. The federal responsibility is to support the work related to resource planning that is defined as critical by the utilities and states engaged in resource planning, and but for the participation of the federal government, would not be done.

The Department feels so strongly about the national interest in IRP and its objectives that it has intervened in several state public commission proceedings (these efforts are not funded out of EERE's budget). A copy of the testimony of Assistant Secretary Tierney in the California proceeding (attached) describes the national interest in advanced IRP objectives in great detail.

Department of Energy
Washington, DC 20585

June 8, 1994

Docket Office
Public Utilities Commission of the State of California
505 Van Ness Street
San Francisco, California 94102-3298

RE: R.94-04-031; Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation

TO THE FILING CLERK:

Enclosed for filing in the Public Utilities Commission of the State of California's (Commission) above captioned docket are thirteen copies of the Department of Energy's (DOE) comments on the proposed California industry restructuring plan. Pursuant to Judge Malcolm's approval, DOE will file with the Commission by Express Mail the signed original comments on Thursday, June 9, 1994.

Sincerely,

Lawrence Gollomp

Lawrence A. Gollomp
Assistant General Counsel
(202)-586-6958
FAX (202)-586-7479

Enclosure

Department of Energy
Washington, DC 20585

CERTIFICATE OF SERVICE

On this 8th day of June, 1994, the U.S. Department of Energy has served a copy of its comments in Docket R.94-04-031 on all parties on the Public Utilities Commission of California's (Commission) service list. Copies to the Commission were hand-delivered. Otherwise, copies were sent by U.S. Mail, first class, postage paid.

Lawrence A. Gollomp
Assistant General Counsel

June 8, 1994

BEFORE THE

PUBLIC UTILITIES COMMISSION

OF THE STATE OF

CALIFORNIA

IN RE;

Order Instituting Rulemaking on the Commission's Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation	)	Docket No. R.94-04-031

Comments of the United States Department of Energy

June 8, 1994

EXECUTIVE SUMMARY

Purposes of the Department's comments

The Department of Energy's comments address issues of national importance that are affected by the California Public Utilities Commission's proposal to restructure the state's electricity industry. These issues relate to U.S. energy productivity and economic competitiveness; economic efficiency in electricity markets; electric system reliability; environmental impacts of energy production and use; security and diversity of energy resources; technology research and development; equity; energy efficiency; integrated resource planning; U.S. treaty commitments and obligations; and jurisdiction over electric regulation.

The Department of Energy has primary responsibility for energy policy within the executive branch of the United States government, and files these comments in this capacity. The Department's comments on environmental issues were prepared in conjunction with the Environmental Protection Agency.[1]

The federal government also has international energy and environmental obligations that are affected by state energy initiatives. The President has announced the nation's commitment to reduce our country's greenhouse gas emissions to 1990 levels by the year 2000, and issued a comprehensive Climate Change Action Plan to meet that goal. The plan includes nearly 50 separate actions to reduce emissions of CO2 and other greenhouse gases. A significant portion of this reduction will come from the electric power sector and electricity consumers. Thus, it is necessary to scrutinize the impact of the proposal on the industry's ability to pursue such reductions. Achieving the Action Plan's objectives will be possible only with the cooperation and support of electric utilities and state regulatory authorities.

---

[1] These comments do not necessarily represent the views of the Federal Energy Regulatory Commission (FERC). FERC is an independent regulatory agency, and did not participate in the preparation of these comments.

The Department recognizes that the California Commission and the state legislature have the responsibility to develop and implement policies regarding the regulation and operation of the electricity services industry within California. Regarding these issues, the Department's comments are not meant to be prescriptive. However, other elements of the Commission's proposal raise legal and jurisdictional issues that need to be resolved. On these and other issues with significant implications for national energy policy we will recommend policy approaches.

Furthermore, given the strategic nature of electricity services and the interstate nature of electricity markets in the U.S., it is important for federal and state policy makers to coordinate on energy policy matters. Despite a lengthy list of caveats and concerns which follows below, the Department of Energy wishes to indicate its strong support for the Commission's efforts to increase competition in the electricity sector. The caveats and concerns are there because the electricity industry is complex and too important to be dealt with casually, not because we do not think the Commission is heading in the right direction. The Department is convinced that increased competition, suitably formulated, in this industry can afford benefits for all, and that the problems which must be addressed to achieve these benefits will yield to sustained cooperative efforts by the affected government agencies and stakeholders.

The Commission and the Department share common goals

The Department of Energy supports the major goals of the California Commission's proposal. These goals are consistent with national energy policy and with policy directives in pertinent federal legislation. The Department will work with the Commission to achieve the goals of its proposal in an manner consistent with national interests and federal statutory and treaty responsibilities.

The proposed mechanisms involve many jurisdictional uncertainties

The Department of Energy commends the Commission for its foresight in developing a bold vision which offers benefits and opportunities for the public and the electricity industry. However, the electricity industry is strategically vital to our nation's economic development, environmental quality, and standard of living. Placing greater reliance on markets, while changing important elements of regulation, could have major impacts on the environment, energy efficiency, and resource diversity. Before restructuring is implemented, effective institutions must be developed which will protect environmental, energy efficiency, and resource diversity objectives within a market-based paradigm.

The Commission has chosen a method of achieving its goals which is potentially rewarding but also entails significant risk. We urge the Commission to consider implementing methods and processes that reduce uncertainty and risk and increase the likelihood that the Commission will be able to achieve its goals. Although there are many uncertainties in the Commission's proposal as presented to date, perhaps the one which will most affect the successful achievement of the Commission's goals is the uncertainty that exists today with regard to the division of regulatory jurisdiction between federal and state governments.

In our opinion, the Commission's proposal presses up to, if not beyond, the boundaries of state jurisdiction. We make this observation not because our views are dispositive--clearly they are not. We raise this issue here because, if the Commission seeks to implement change to reach its goals, it might consider a strategy less certain to be clouded by legal challenges over the next few years.

Our view is that either these legal uncertainties should be resolved before the Commission goes forward, or the Commission should consider a strategy that would allow it to rely on its existing authorities to achieve many of its goals in the near term while jurisdictional and other uncertainties are resolved. Careful consideration should be given to creating an efficient structure for electricity markets and to developing market-driven regulatory institutions and policies which can address recognized imperfections in energy markets while taking maximum advantage of the efficiencies created by effective competition.

Key elements of the proposal can be implemented while avoiding legal and jurisdictional uncertainty

The breadth and complexity of the changes the Commission is proposing to bring about in California, as well as the strategic importance of the electricity industry to the state and the nation, caution against acting in haste. In so saying, the Department of Energy does not recommend inaction. We believe that many of the Commission's goals can be achieved through existing authority. The Department recommends that the

Commission seriously consider moving forward with these parts of its proposal while legal and other uncertainties are being resolved.

The following components of the proposal appear feasible of pursuit under the authorities of the Commission that are not subject to serious challenge:

- Performance-based regulation (PBR). Basing rates on performance rather than cost can reduce regulatory burdens, provide incentives for economic and energy efficiency, promote environmental objectives, incorporate the principles of integrated resource planning, and provide flexibility for utilities to respond to customer needs and changing market conditions.

- Rate design improvements. The Commission could develop rate design principles that send better price signals about the cost of providing (or value of receiving) electricity service. Better rate design would promote economic efficiency, discourage uneconomic bypass, and contribute to revenue stability for utilities.

- Integrated Resource Planning/Demand-Side Management. The Commission should recognize the role which integrated resource planning (IRP) and demand-side management (DSM) play in addressing market imperfections, while reconciling its continuing commitment to IRP and efficiency with the objective of increased reliance on competitive markets. Designing DSM programs to become more market-driven and to promote market transformation can improve their effectiveness at lower costs. Maintaining a revenue adjustment mechanism which decouples profits from sales will facilitate development of market-driven DSM programs. The Commission should develop a flexible, performance-based approach to IRP as an alternative to the current Biennial Resource Plan Update process, which many believe to be cumbersome.

- Promote wholesale competition. The Commission could promote economic efficiency via more effective wholesale competition by supporting California-wide, or larger western-area regional transmission groups, and by implementing policies in California that are consistent with wholesale competition.

The Department wishes to emphasize that it regards retail competition as largely a matter of state policy, although one shrouded in many uncertainties concerning state/federal jurisdiction. The Department would be pleased to work with the Commission and with other interested parties to explore options for resolving the many uncertainties associated with retail competition and retail wheeling, should the Commission decide that these aspects of its proposal need more research and problem-solving before adoption by the Commission.

If the Commission decides to go forward with all the elements of its proposal, the Department would support the effort if the legal uncertainties are resolved and nine key "design requirements" are suitably addressed. The nine design requirements are:

- Economic efficiency and industrial competitiveness. The proposal should promote these goals, whether through the current methods the Commission proposes, or through other approaches.

- Environmental protection. Environmental protection must be an outcome of the Commission's proposal, preferably by avoiding initiatives that would not sustain the state's successful progress in promoting energy efficiency, and commercializing clean energy sources such as renewable energy and fuel cell technologies.

- System reliability. Assurance of continued system reliability under changed circumstances must be a cornerstone of the approach adopted by the California Commission. More detail is needed about how new or existing institutions will meet this critical requirement.

- Fuel diversity and renewables. Fuel diversity provides important energy security and reliability benefits, and renewables help reduce environmental impacts. Therefore, we urge the Commission to adopt reforms that do not jeopardize diversity of supply.

- Research and development and use of new technologies. The Commission should give explicit consideration to means of minimizing adverse impacts of reform proposals on utility company investment in research, development and commercialization for new technologies, such as fuel cells, renewable energy generation, and energy efficient equipment.

- Equity. Although the Commission has affirmed its intention to protect ratepayers from cost-shifting and cross-subsidies and to protect the financial health of utilities, at present the proposal does not provide a sufficient explanation of how these goals would be accomplished. Care should be taken to develop and implement a consistent and comprehensive proposal that minimizes the potential for distortions and inequities and fairly allocates the benefits and costs of expanded competition.

- Stranded Assets. The Commission proposes to measure and recover costs associated with stranded assets, which it terms "uneconomic generating assets," from direct access and utility service customers. However, it is unclear how the Commission's proposed method for calculating these costs would work or how this charge would be assessed against each customer. The Commission needs to ensure that this charge is calculated accurately and assessed to all customers fairly. Also, the Commission should consider what assets may be included as "uneconomic" and whether all uneconomic asset costs should be paid by consumers, by shareholders, or be apportioned between these groups in some way.

- Integrated Resource Planning (IRP). DOE agrees with the Commission's conclusion that there is no inherent conflict between competition and integrated resource planning. At the same time, however, a retail market for electricity services will not necessarily fulfill the functions of IRP in ensuring a balanced, integrated approach to utility resource planning. To retain the benefits of IRP, the Commission may need to adopt a regulatory structure that explicitly incorporates IRP principles. For example, performance-based regulation (PBR) proposals currently before the Commission contain features that are consistent with IRP principles. Thus, it appears that PBR could form the basis for a new performance-based approach to least-cost provision of service.

- Demand-Side Management (DSM). We are intrigued by the prospects of innovative packaging of DSM as part of electricity services to customers. However, it is likely that the same market impediments that earlier led commissions to encourage utilities to become more involved in delivery of energy efficiency services will reappear, should utilities withdraw from funding DSM as a result of the Commission's proposal. The DOE recommends that prior to any decision to adopt retail wheeling, the Commission should work with California utilities and other parties to develop mechanisms that ensure that the provision of lowest-cost energy services is consistent with the new competitive paradigm.

Comments of the United States Department of Energy to the Public Utilities Commission of the State of California
Docket No. R.94-04-031

TABLE OF CONTENTS

I. Introduction 1

II. Purposes of the Department's comments 1
  A. Goals of the California Commission's proposal . . . 4
  B. DOE has similar energy policy goals 6
  C. Potential benefits of competition in electricity markets 8

III. The selection of mechanisms to achieve the Commission's goals is important 9
  A. Summary of the Commission's proposal 9
    1. Performance-based regulation 9
    2. Improve wholesale competition 10
    3. Rate design issues 11
    4. Retail access 12
  B. The proposed mechanisms involve many uncertainties 13
  C. Legal and jurisdictional uncertainties 16
    Uncertainty over state authority to order retail wheeling 17
    Federal jurisdiction over ratemaking for retail wheeling 20
    PUHCA restrictions on entering retail market . 21
    Mandatory purchase obligation under PURPA . . 22

IV. Alternatives to the Commission's proposal 23
  A. Key elements of the proposal can be implemented while avoiding legal and jurisdictional uncertainty 23
  B. DOE recommendations 26

V. How would implementation of the proposal affect matters of national interest? 27
    1. Economic efficiency/industrial competitiveness 28
    2. Environmental protection 29
    3. System reliability 33
    4. Fuel diversity and renewables 34
    5. Research and development and use of new technologies 34
    6. Equity 35
    7. Stranded assets 36
    8. Integrated resource planning (IRP) 37
    9. Demand-side management (DSM) 39

VI. Conclusion 43

I. Introduction

The Department of Energy (DOE, or the Department) is pleased to submit comments to the Public Utilities Commission of the State of California (California Commission or Commission) on issues relating to the California Commission's Rulemaking and Investigation on Proposed Policies Governing Restructuring California's Electric Services Industry and Reforming Regulation. In doing so, our intention is to speak to the national interest on energy policy issues. It is not our intention to be prescriptive regarding state energy policy. We appreciate the Commission's willingness to consider national concerns in this rulemaking.

The Department of Energy has primary responsibility for energy policy within the executive branch of the United States government, and files these comments in this capacity. The Department's comments on environmental issues were prepared in conjunction with the Environmental Protection Agency.[1]

II. Purposes of the Department's comments

The Department of Energy's comments address issues of national importance that are affected by the California Commission's proposal. These issues relate to U.S. energy productivity and economic competitiveness; economic efficiency in electricity markets; electric system reliability; environmental impacts of energy production and use; security and diversity of energy resources; technology research and development; equity; energy efficiency; integrated resource planning; U.S. treaty commitments and obligations; and jurisdiction over electric regulation.

---

[1] These comments do not necessarily represent the views of the Federal Energy Regulatory Commission (FERC). FERC is an independent regulatory agency, and did not participate in the preparation of these comments.

The Department of Energy has the responsibility for developing, articulating, and implementing (or assisting others in implementing) national energy policy. Given the strategic and infrastructural character of electricity services and the interstate nature of electricity markets in the U.S., it is important for federal and state policy makers to coordinate on energy policy matters.

The federal government also has international energy and environmental obligations that are affected by state energy initiatives. At the Earth Summit in Brazil in 1992, the United States joined 180 countries in signing the Framework Convention on Climate Change. This document entails important commitments for developed nations to adopt national policies and take corresponding actions to mitigate climate change resulting from anthropogenic emissions of carbon dioxide (CO2) and other greenhouse gases.

On Earth Day, 1993, President Clinton announced a commitment to return U.S. emissions of greenhouse gases to their 1990 levels by the year 2000. In October 1993, the Administration issued its Climate Change Action Plan, a comprehensive national plan designed to meet this objective. The plan includes nearly 50 separate actions to reduce emissions of CO2 and other greenhouse gases. Many of these actions are to be taken by the electricity industry. As a lead agency in developing and implementing the President's plan, the Department wants to ensure that implementation of the proposal does not have adverse effects on the industry's ability to achieve these reductions.

The Action Plan is projected to reduce our net greenhouse gas emissions by 108 MMTCE (million metric tons of carbon equivalent)--about a 7 percent reduction from projected baseline levels--by 2000. Improved electrical end-use efficiency would result in a nationwide savings in utility and non-utility generation of about 158 million megawatt-hours in 2000.[2] Achievement of these major levels of cost-effective energy efficiency will be possible only with the cooperation and support of electric utilities and state regulatory authorities.

Reflecting EPACT's goals and principles, the Department respects the authority of the California Commission and the state legislature to develop and implement policies regarding the regulation and operation of the retail electricity services industry within California, although certain legal and jurisdictional issues pertaining to the Commission's proposal need to be resolved. Therefore, we provide our comments on the Commission's proposal to (1) highlight areas where we believe the national interest may be affected, either positively or negatively, and (2) suggest means of incorporating these interests into the Commission's proposal.

---

[2] U.S. Department of Energy, The Climate Change Action Plan: Technical Supplement (DOE/PO-0011), March 1994.

A. Goals of the California Commission's proposal

The Department of Energy supports the major goals of the California Commission's proposal, which we understand to be:

- Exploit the potential of competitive markets to acquire least-cost generation services;
- Provide market-based prices for products and services delivered in sectors of the electricity services industry in which there is effective competition;
- Promote regulation which is better focused on rewarding performance and efficiency;
- Support the efficient use of society's natural resources,

generally, and its energy resources, specifically;

- Maintain and enhance environmental quality;

- Ensure that California's consumers, including low-income consumers, enjoy universal access to a basic and affordable package of electric services; and

- Ensure that California's consumers receive reasonably priced, environmentally sound, safe, and reliable electric service.

These goals of the California Commission appear consistent with national energy policy and with policy directives in pertinent national legislation. The Department will work with the Commission to achieve the goals of its proposal in an manner consistent with national interests and federal statutory and treaty responsibilities.

The Department agrees with the Commission's view that effective competition produces results superior to those obtainable under traditional cost-of-service regulation and should be relied upon where possible. We also agree that alternatives to traditional cost-of-service regulation, such as performance-based regulation, should be explored and implemented as appropriate in those parts of the electricity industry that continue to display monopoly characteristics. We also support the Commission's commitment to ensure a reliable, environmentally sensitive, and diverse supply of electricity to California ratepayers.

B. DOE has similar energy policy goals

The Department of Energy's energy policy goals are very similar to those of the California Commission. The Department's policies are rooted in principles established in the DOE Organization Act, the Clean Air Act, the Energy Policy Act of 1992 (EPACT or Energy Policy Act) and in the Department's Strategic Plan. The Department's primary energy policy goals are to:

- Enhance energy productivity to strengthen the U.S. economy and improve living standards, through policies and programs that support more open and efficient energy markets that incorporate social costs, increase energy efficiency in all sectors of the economy, and develop and deploy new energy technologies and services both domestically and in international markets.

- Ensure reliable, secure energy services by facilitating greater diversity of competitive energy resources and technologies in the marketplace, increasing reliance on risk sharing mechanisms, and promoting flexibility in the energy sector.

- Reduce adverse environmental impacts associated with energy production, delivery, and use, through efforts to reduce energy-related greenhouse gas emissions and other pollutants, support research, development, demonstration and commercialization of energy efficiency and alternative energy technologies, and support regulatory and incentive approaches to encourage energy efficiency and greenhouse gas emission reductions.

- Promote economic, regional, and inter-generational equity by promoting universal access to affordable energy services, helping to eliminate disproportional adverse environmental impacts of energy systems on geographic regions and minority and low-income groups, promoting fairness in the distribution of economic benefits of energy programs among geographic regions and groups, and avoiding the transfer of costs and risks of energy systems to future generations.

The Department of Energy is working to incorporate these goals into national energy policies and programs. We also hope that these principles and goals will resonate positively at the state and local level, and we seek to work with state and local agencies to achieve those objectives we hold in common.

C. Potential benefits of competition in electricity markets

The Administration and the Department support efforts to reduce regulation in markets that are workably competitive. Replacing regulation with competition in markets that no longer display monopolistic characteristics can--with attention by policymakers to the design of appropriate market mechanisms--provide for increased operational efficiency in the electricity supply system; lower rates to consumers; expanded consumer choice; increased diversity of fuel supply; and innovative ways to reduce costs, provide energy efficiency services, and protect the environment. At the same time, the Administration and the Department also recognize the need for limited and flexible regulation to achieve social goals where the market may not do so adequately, in areas such as environmental protection, energy efficiency, service availability, and exercise of market power by regulated firms with unregulated subsidiaries.

Most electricity analysts agree that the generation sector of the industry is no longer a natural monopoly. The California Commission proposes to extend the benefits of competition in electricity generation to retail customers, while at the same time reducing regulation in other segments of the electricity industry, such as the provision of energy efficiency services. The Commission expects that these actions will lead to overall increases in economic productivity, with attendant benefits for consumers.

Despite the lengthy list of caveats and concerns which follows below, the Department of Energy wishes to indicate its strong support for the Commission's efforts to increase competition in the electricity sector. The caveats and concerns are there because the electricity industry is complex and too important to be dealt with casually, not because we do not think the Commission is heading in the right direction. The Department is convinced that increased competition in this industry will afford benefits for all, and that the problems which must be addressed to achieve these benefits will yield to sustained cooperative efforts by the affected government agencies and stakeholders.

III. The selection of mechanisms to achieve the Commission's goals is important

A. Summary of the Commission's proposal

The Department interprets the Commission's proposal to contain four major elements:

1. Performance-based regulation. The proposal would replace traditional cost-of-service regulation in monopoly markets with a performance-based regulatory framework. This framework would include a revenue or price cap mechanism to

govern utility operations related to direct access customers. Utilities could negotiate prices with direct access customers for generation and generation-related services that do not exceed current tariffs and are not below the utility's marginal cost. Those prices would receive streamlined regulatory review. This mechanism is designed to increase the utilities' flexibility to respond to market forces and to become more customer-focused by increasing the number and type of service options available to consumers, while also providing incentives for utility efficiency.

2. Improve wholesale competition. The proposal would support wholesale competition in California by causing jurisdictional electric utilities to unbundle and separately price services provided to direct access customers. The proposal also would allow regulated utilities to compete to provide unbundled generation services to direct access customers. However, utilities choosing to do so would be obligated to provide transmission and distribution services to these customers on a nondiscriminatory basis and also would no longer be allowed to enter into ratebase capital expenses for new generation resources.

All customers, whether direct access or utility service customers, would be required to contribute to the recovery of the cost of uneconomic generating assets through a "competition transition charge" assessed as a demand charge. The Commission would open a proceeding to establish the appropriate charge.

3. Rate design issues. The proposal contains several elements that would affect electric utility rate design. In order to provide accurate price signals to consumers, the Commission would separately price different services according to marginal cost-based and usage-based principles. These rates would encourage economically efficient customer decisions.

To ensure that utilities offer reasonable prices for transmission, distribution, system control and coordination services to direct access customers, the Commission would initiate an investigation to disaggregate or "unbundle" the current services package, and assign prices for each service. Transmission and distribution services, as well as system control and coordination services, would continue to receive regulatory oversight.

The proposal would leave the current allocation of costs among consumer classes intact and would not allow any class's overall share of fixed costs to exceed current levels. The Commission also would prevent inequitable shifting of fixed costs among consumers.

4. Retail access. The proposal would allow retail customers to choose "direct access" to alternative electricity service providers on a phased basis. Beginning on January 1, 1996, all transmission level customers would be able to choose direct access, and would need to declare their intention by July 1, 1995. On January 1, 1997, the option of direct access would be extended to customers at the primary distribution level.

On January 1, 1998, customers at the secondary distribution level would be eligible for direct access. On January 1, 1999, all commercial customers would be eligible, and on January 1, 2002 eligibility would be broadened to all customers.

Any customer would have the right to continue to receive service from the utility. The utility would retain its traditional obligation to serve only for those customers who elect not to choose direct access, and those choosing to return to utility service status. The utility would remain the provider of last resort for all customers.

Regulated utilities could compete to provide generation to direct access customers, based on disaggregated services and prices. The utility would be obligated to provide transmission and distribution services to these customers on a nondiscriminatory basis.

Utility shareholders would bear all risks and retain all rewards related to providing generation services to direct access customers. The Commission would closely monitor utility participation in this market to protect consumers and other service providers against self-dealing and cross-subsidization.

B. The proposed mechanisms involve many uncertainties

The importance the Department attaches to the California Commission's proposal reflects the strategic importance of the electricity industry in the United States. A financially sound, reliable, efficient, and clean electricity industry is essential for sustainable economic growth, high levels of employment, and our quality of life. We applaud the California Commission for initiating changes to make our electricity industry more efficient.

Clearly, by focusing on comprehensive, rapid change, the California Commission has taken on a huge and challenging task that will have major repercussions nationally and regionally as well as within California. Seeing the magnitude of the challenge, we hope that the Commission does not intend to undertake this journey alone. At a minimum, other players in the region will be affected by the Commission's decision, and at worst the Commission will not be able to accomplish what it wants to do without the explicit agreement of others.

The Department of Energy supports the Commission's goals, and commends the Commission for its foresight in developing a bold vision of a more competitive electricity industry. However, the Commission has chosen method of achieving its goals which is potentially rewarding but also entails significant risk. The Department notes that many parties appear to believe that the means the Commission has proposed for reaching its destination exceed the Commission's authority.

The mechanisms described in the Commission's proposal involve many uncertainties--jurisdictional as well as substantive--that need to be resolved or attended to before forward progress can be made. In Section IV of these comments, the Department will identify critical technical and policy issues that should be addressed in the next phase of the proposal. In the remainder of this section we examine questions relating to whether the Commission has the legal authority it needs to accomplish its goals.

As detailed in the next sub-section, the proposal faces important legal and jurisdictional uncertainties, the most serious of which pertain to retail wheeling. For example, it is not clear what authority states have to compel jurisdictional utilities to provide such service, or how FERC jurisdiction over rates, terms, and conditions for transmission service will affect implementation of the proposal.

Implementation of the Commission's proposal would probably have major, but as yet uncertain, impacts on the environment. Environmental quality is a subject of state, regional, federal, and international interest. Many parties outside California have an interest in the Commission's proposal and in how it would be implemented.

The transition from an extensively regulated to a more competitive electricity service industry will be a very challenging undertaking. It is likely to be very difficult to manage this transition due to the speed and complexity of events that will take place once competitive forces are in motion.

The size, complexity, and importance of the task the Commission has taken on require that to the extent possible the Commission and the other parties affected by this proposal commit themselves to developing and supporting a transition process through to a successful completion. There is a need to avoid "quick fixes" and "half-starts," to develop cohesive and feasible policies and proposals that make progress toward the goals, and to work with other decisionmakers and stakeholders who will be affected by the Commission's decisions and who may themselves control certain means that could impede or enhance the Commission's success.

C. Legal and jurisdictional uncertainties

The California Public Utilities Commission has proposed sweeping changes in the way utilities are regulated in the state. However, the Commission's plan leaves most of the crucial details to be worked out. One of the most critical and controversial subjects not addressed by the Commission is the allocation of regulatory jurisdiction between federal and state governments.

In considering its proposal to restructure the electric service industry in California, the Commission should recognize the potential constraints imposed by federal law. The Federal Power Act (FPA), the Energy Policy Act, the Public Utility Regulatory Policy Act (PURPA) and a large body of case law support a strong federal policy of national and state regulatory coordination.

Allowing all consumers of investor-owned utilities within California to have access to competitive power markets raises a number of issues where the boundaries of state regulatory jurisdiction are unclear and untested. The uncertainty with respect to these issues will, no doubt, result in litigation or legislation designed to clarify them. However, it does not appear likely that these issues will be resolved within the time frame contemplated by the Commission for developing this plan and launching its implementation. Moreover, it is almost certain that the proposal, if adopted in its present form, will be tied up in legal challenges--at the Federal Energy Regulatory Commission, and in the courts--for years to come.

The Department urges the Commission to attempt to resolve the critical jurisdictional questions before going forward. Alternatively, the Commission could consider a transition strategy that includes adopting those elements of the proposal for which there is relatively high jurisdictional certainty and then working to resolve the remaining elements before adopting them.

Uncertainty over state authority to order retail wheeling

Although the California restructuring proposal is predicated on the assumption that the Commission can order utilities to provide retail wheeling services, whether state commissions actually have this authority is uncertain.

On the one hand, section 201 of the Federal Power Act grants the Federal Energy Regulatory Commission jurisdiction to regulate "transmission of electric energy in interstate commerce."[3] 16 U.S.C. 824. This grant of jurisdiction is not limited to transmission related to wholesale sales--the statutory language appears to extend to both wholesale and retail wheeling. According to one view, Congress occupied the field with regard to regulation of transmission with the Federal Power Act, thus precluding states from ordering wholesale or retail wheeling.[4]

---

[3] The courts have interpreted the word "interstate" to include transactions within a single state, if the transaction involves interconnected lines in which the potential exists for commingling with electricity from any out-of-state source. FPC v. Florida & Light Co., 404 U.S. 453 (1972).

Proponents of this view argue that the courts have held that FERC's jurisdiction is plenary and extends to all transmission and wholesale sales of power in interstate commerce which are not expressly exempted by the FPA itself. Federal Power Commission v. Southern California Edison Co., 376 U.S. 205 (1964). Thus, if transmission of electric energy over the electrical system of a electric utility falls within the definition of "transmission of electric energy in interstate commerce," it is subject to FERC's exclusive authority to establish rates, terms, and conditions. Any effort by a state to order retail wheeling would interfere with FERC's plenary authority to set rates, terms, and conditions for transmission service, and must fail since it would "conflict with or interfere with federal authority over the same activity." Mississippi Power and Light Co. v. Moore, 487 U.S. 352, 377 (1988).

On the other hand, states have exercised regulatory authority over transmission for retail sales as a part of bundled service for many years, suggesting the existence of extensive state authority in this area. The wholesale transmission provisions of the Federal Power Act, as amended by the Energy Policy Act of 1992, contain a savings clause that preserves "any authority" states had with regard to transmission of electric energy directly to an ultimate consumer (i.e., retail wheeling). 16 U.S.C. 824k(h)[5] Because FERC lacked direct authority to order retail wheeling prior to EPACT, the argument that states were preempted from taking the same action was undercut. On these bases, some have argued that states have authority to order retail wheeling.

---

[4] Because the FERC is specifically barred from ordering transmission of electric energy directly to an ultimate consumer (i.e, retail wheeling) 16 U.S.C. 824k(h), neither the states nor the FERC would have authority to order retail wheeling under this construction. However, retail wheeling would presumably be legal and subject to FERC jurisdiction if provided voluntarily by the transmission owner.

In making these comments, DOE does not take a position on how the law should be construed, nor do we predict the outcome of litigation concerning state authority to order retail wheeling. Instead, we simply observe that there is significant legal uncertainty and that it may take several years before there is a conclusive judicial interpretation. We therefore conclude that it would be a strategy entailing significant risk for the Commission to embark on all of the elements of its proposed regulatory reform, since it is likely that the ensuing legal challenges would delay California's enjoying the outcomes it hopes to foster with the introduction of the new regulatory regime and industry structure.

---

[5] The EPACT savings clause precludes any interpretation of EPACT as either enhancing or undercutting any preexisting state authority to order retail wheeling. Congress appears to have intended to avoid opining on whether any such state authority exists.

Federal jurisdiction over ratemaking for retail wheeling

Sections 205 and 206 of the Federal Power Act grant FERC authority to determine just and reasonable rates for the transmission of electricity subject to the jurisdiction of the Commission, *i.e.*, transmission of electric energy in interstate commerce. Thus, even if the Commission is found to have jurisdiction to *order* retailing wheeling, it may be argued that the FERC has jurisdiction over the *rates and terms* for these services.

The Commission has indicated its intention to impose a charge on all consumers, including direct access customers, to recover stranded investment costs. If this charge were to be imposed as part of a transmission rate subject to FERC jurisdiction or as an "access charge" that is found to be a component of a transmission rate (rather than as a condition of receiving a service regulated by the state) it would be outside Commission control, thus posing another obstacle to implementation of the plan.

Should such a stranded investment charge be subject to FERC jurisdiction, it would be subject to FERC's general guidelines regarding the recoupment of stranded costs. These guidelines currently restrict recovery via transmission rates to circumstances in which: (1) the transmitting utility had a reasonable expectation that the customer would continue to purchase power; (2) the stranded cost charge is no more than what the customer would have paid if it had remained a power customer; and (3) the stranded cost charge is subject to reduction to reflect mitigation measures available to the transmitting utility. Massachusetts Electric Company, 66 FERC ¶61,036, 61,060 (January 13, 1994).

PUHCA restrictions on entering retail market

The Energy Policy Act of 1992 amended the Public Utility Holding Company Act of 1935 (PUHCA) to provide that ownership of exempt wholesale generators (EWGs) would not trigger PUHCA regulation. This amendment was intended to eliminate a significant regulatory barrier to entry to the wholesale generation market, and therefore allow greater competition in that market. The amendment did not generally extend the PUHCA exemption to generators making retail sales. As a result, there will likely be fewer sellers in the retail market envisioned by the Commission than there are in the wholesale market.

Mandatory purchase obligation under PURPA

Pursuant to Section 210 of PURPA, 16 U.S.C. 824 a-3, and the implementing regulations, an "electric utility" is required to offer to purchase electricity at its avoided cost from qualifying cogeneration and small power production facilities. The intent of the section is to give incentives to alternative supply sources and thus enhance the development of diversified energy supplies. Under the California proposal, investor-owned utilities would be operating under the pressures of a competitive retail market but continue to have an obligation to purchase under PURPA. In addition, new entrants to the California retail market would also be subject to PURPA's obligation to purchase power from qualifying facilities. The California proposal does not appear to have considered how these requirements will be implemented.

The examples above illustrate that there are important constraints in federal law pertaining to the Commission's proposal, and equally important uncertainties related to jurisdiction. It is not known whether or when amendments to federal statutes or conclusive judicial interpretations of jurisdiction might be obtained. Further, as the Commission notes in its proposal, there may be a number of constraints under state law pertaining to the proposal, thus creating an additional set of legal uncertainties.

IV. Alternatives to the Commission's proposal

A. Key elements of the proposal can be implemented while avoiding legal and jurisdictional uncertainty

The practical and legal uncertainties discussed in the previous sections highlight the risks of moving too swiftly. The strategic importance of the electricity industry and the possibility of adverse economic and environmental consequences of well-intended but untested policies caution against acting in haste. This does not mean that action is not appropriate, only that it should be deliberate, well-reasoned, and flexible, so that policies and programs may be altered more easily to reflect new information and changing circumstances and that the likelihood of irreversible harm is minimized.

The potential benefits from implementing a well-conceived and comprehensive set of policies to restructure the electricity industry and alter its regulation are large. Therefore, delaying all action until technical and legal uncertainties are resolved may itself be a costly strategy. The Department of Energy does not recommend inaction. The Department believes that many of the goals sought by the Commission can be achieved through its existing authority. The Department recommends that the Commission give serious consideration to moving forward with such options, while legal and other uncertainties pertaining to other elements of the proposal are being resolved.

The following components of the proposal appear feasible even under a narrow interpretation of the Commission's existing authority:

- Performance-based regulation. PBR can reduce regulatory burdens, provide incentives for economic and energy efficiency, promote environmental objectives, and provide flexibility for utilities to respond to customer needs. PBR also can include procedures for price reform, such as unbundling and separately pricing electricity services, so that consumers have accurate price signals when making consumption and investment decisions. PBR also provides an opportunity to incorporate a more streamlined, market-oriented, and flexible version of IRP into the regulatory process.

- Rate design improvements. The Commission also can institute rate reform improvements to foster efficiency improvements and to recover costs associated with uneconomic assets. Efficient consumption and investment decisions by utility customers should be based on price signals that reflect the cost of providing (or the value of receiving) electricity service. The Commission has the authority to price electricity to strike a balance between economic efficiency, equity, and rate continuity.

- IRP/DSM. Relying on existing authority to promote its goals also may provide an opportunity for the Commission to reconcile its integrated resource planning and demand-side management objectives with its competitive market objectives. Both sets of objectives involve promoting least-cost solutions to providing energy services. Developing IRP and DSM mechanisms that are consistent with competitive markets can combine the best elements of each policy option. This may be more easily achieved, at least initially, under a system of flexible, market-oriented regulation rather than the under the uncertainty inherent in the Commission's full proposal.

- Promote wholesale competition. The Commission has affirmed its support for competitive wholesale electricity markets and formation of regional transmission groups. Resolution of wholesale transmission issues involving access, pricing, unbundling of services, and regional planning and coordination activities may achieve many of the Commission's goals and likely would be a good first step toward development of competitive retail markets. The Commission could promote effective wholesale competition by supporting California-wide, or larger western-area regional transmission groups, and by implementing policies in California that are consistent with wholesale competition.

B. DOE recommendations

The Department of Energy recommends that the California Commission implement those elements of its proposal over which it clearly has existing authority, while the uncertainties associated with the remaining elements are resolved. Careful consideration should be given to creating an efficient structure for electricity markets and to developing market-driven regulatory institutions and policies which can address recognized imperfections in energy markets while taking maximum advantage of the efficiencies created by effective competition.

This strategy would provide important benefits to consumers and would likely go a long way toward achieving the goals which the Commission and the Department share. It also would provide valuable lessons and information that could be used to implement additional reforms at a later date.

The Department wishes to emphasize that the ball is clearly in California's court with regard to deciding whether to move toward retail competition and retail wheeling. If the Commission decides to move forward, we believe that it should take into account the many uncertainties associated with its proposal and consider approaches that would provide significant benefits to consumers while avoiding many of these uncertainties. The Department would be pleased to work with the Commission and with other interested parties to explore options for resolving these many uncertainties, especially those relating to federal and state legal and regulatory authorities.

V. How would implementation of the proposal affect matters of national interest?

The Department supports the Commission's principles and goals, and indeed supports the proposal, _if_ several critical matters of national interest are suitably addressed prior to implementation. California's bold vision of a restructured, competitive electric industry promises significant economic opportunities for consumers. The Department endorses the direction in which the Commission is moving, and offers comments to help the Commission find the right means to reach its goals.

Given the broad scope of the changes the Commission seeks, it is essential that the Commission determine to the extent practicable in advance the specific mechanisms it will rely on to satisfy multiple policy objectives in the area of economic efficiency, system reliability, financial integrity, fuel diversity, equity, and environmental protection. Indeed, DOE wants to support the Commission in its move toward greater industry competition and economic competitiveness. However, we are concerned that the technical and legal mechanisms to achieve the Commission's goals are at present insufficiently specified or settled to give us confidence that the Commission will be able to meet its own goals or those of the federal government.

Therefore, we urge the Commission to proceed at present only with those elements of the proposal where we consider that the Commission has found sufficiently workable technical and legal solutions--i.e., performance-based regulation, efficient rate design, and wholesale competition, but not direct access.

In any event, the Department recommends that the following nine key "design requirements" be addressed and resolved:

1. Economic efficiency/industrial competitiveness. The Commission should consider the impact that its proposal will have on economic efficiency and on industrial competitiveness. The goals of the proposal are to reduce electricity prices to consumers and to promote economic development in California. However, it is unclear how effective the proposal would be in achieving these goals, or whether other methods of achieving the goals might be more effective. As the Commission adds detail to its proposal, we urge it to pursue net economic efficiencies rather than the transfer of benefits and costs among customers within California, and between California and neighboring regions.

2. Environmental protection. The Department of Energy believes that environmental protection considerations should play a prominent role in the future evolution of the Commission's proposal. The Commission promises to maintain its commitment to a clean environment, but the environmental implications of the proposal--the possible costs to environmental quality--are not clear. For example, the proposal would make it less likely that California utilities will maintain their leadership in implementing cost-effective demand-side management (which reduces consumers' energy bills and emissions) and more difficult for utilities to support development of clean energy resources and technologies. The Commission states that it will work closely with the California state legislature and other stakeholders to explore methods to promote these, and other environmental goals.

The Department believes that development of such methods should be a precondition to proceeding with any of the elements in the proposal (including direct access). As the Commission itself states, it seeks to pursue economic efficiency as well as environmental protection. We argue that whatever regulatory reform strategy is adopted, it should recognize that energy, environmental, and economic goals are interdependent.

In its deliberations, we urge the Commission to recognize energy efficiency and renewable technologies as "clean air measures" that can play an important role in California's electric generation sector, particularly in nonattainment areas. Over half of Californians currently live in such areas where the air does not meet federal or state health-based air quality requirements. Energy efficiency and renewable energy technologies can provide cost-effective means of attaining health-based air quality standards required by the Clean Air Act, and thereby enhance opportunities for economic growth.

To provide for rational choices by electricity service providers and customers, we urge the Commission to avoid creating a system with adverse environmental implications. For example, while we want consumers to enjoy the economic benefits of the efficiencies increased competition can bring, new or altered regulatory processes should avoid creating incentives that would inadvertently stimulate increased electricity sales to utility service or direct service customers. In theory, a performance-based rate approach that uses tariffs based on average revenue per customer better satisfies the environmental test than one based on average revenue per kilowatt-hour.

If the Commission goes forward with performance-based ratemaking, it could hold utility management accountable for environmental performance as well as for economic performance. Given the utility industry's significant environmental emissions, it would be logical to reward environmental performance as well as economic efficiency. Indeed, the Commission could consider means of inducing non-utility electric service providers to improve their environmental performance as a condition of serving direct assess customers. This type of approach would support the Commission's dual goals of economic efficiency and environmental protection. Otherwise, significant market distortions are likely if environmental requirements differ significantly among electricity service providers.[6]

A high environmental priority for the Administration is to reduce the nation's emission of greenhouse gases to 1990 levels by the year 2000. This is a significant undertaking, and success will require active support and participation by the electric power industry. The industry is now the largest emitter of greenhouse gases in the nation, emitting 36 percent of the country's greenhouse gases. Recognizing that the industry's participation is essential to achieving our climate change objectives, Secretary O'Leary has worked extensively with the industry to structure a program which would allow for voluntary greenhouse gas reductions at the lowest possible cost.

The program, known as the Climate Challenge, requires a participating utility to make at least one of six commitments to reduce greenhouse gas emissions, and report annually on its progress in achieving this commitment. In exchange, the companies were provided maximum flexibility in securing these reductions in ways they deemed most appropriate. This agreement was consummated by the signing of an historic accord during Earth Week.

---

[6]. We do not mean to imply that every seller should face the same environmental requirements for each pollutant. For instance, a ton of NOx emitted in a nonattainment area will have different impacts than a ton of NOx emitted in a remote rural area. For some emissions, however, similar requirements would probably be appropriate.

As a next step, the Department will begin to negotiate company-specific agreements for delivering the agreement. Presently, 766 electric utilities, representing 80 percent of the electricity generated in the nation, have signed up to participate in this program. We believe it is an historic agreement between the federal government and the electric power industry.

We are concerned that the Commission proposal's may affect these initiatives adversely. We expect that a large portion of the nation's greenhouse gas reductions will be achieved through utility investments in energy efficiency and the commercialization of clean energy sources. These investments have been encouraged by regulatory policies which recognize that such investments are less likely if the utility is adversely affected by such expenditures. In the past, such investments have traditionally been recovered over the long term, and the Department is concerned that the short-term pressures of a more competitive retail market could establish a disincentive to continued investment in projects with longer payback periods.

For these reasons, we urge the Commission to develop new mechanisms which will provide incentives for continued utility investment in technologies and services that achieve environmental benefits.

3. System reliability. The United States enjoys one of the most reliable electricity systems in the world. This high standard for operational reliability provides important benefits to consumers and contributes to the high value-added roles that electric services play in our economy. Our nation's electric reliability is ensured and delivered today through a complicated system of state and federal regulation, plus extensive self-regulation by the industry.

The Commission states in its proposal that it will not tolerate degradation of system reliability. Without a more complete statement of how the Commission expects this to be accomplished, however, we remain concerned. For example, we expect that retail competition, over time, could increase dramatically the number of participants in electricity markets and make operation, coordination and planning of generation and transmission facilities and services more difficult. Specific articulation of means to ensure continued system reliability through existing or new institutions and mechanisms should be a cornerstone of the California Commission's proposal.

4. Fuel diversity and renewables. The Department of Energy seeks to promote technology and fuel diversity, consistent with the goals of reducing the nation's vulnerability to price volatility and supply disruptions. Such diversity, especially the use of renewable energy technologies, provides important energy security and reliability benefits, and helps reduce environmental impacts resulting from electricity production.

The impact of the proposed regulatory changes on fuel diversity and use of renewable energy technologies is important but uncertain. California has long been a leader in promoting fuel diversity, energy conservation, and use of renewable energy technologies. The Commission should give explicit consideration to the implications of proposed reforms on the use of renewable energy and energy efficiency technologies, both of which are indigenous resources in California.

5. Research and development and use of new technologies. The Department of Energy supports research, development, demonstration, and commercialization of new energy technologies largely through partnership programs with industry and the Department's national laboratories. These programs are designed to increase the competitiveness of new, efficient energy supply and end-use technologies and allow them to compete effectively in the marketplace. These programs also contribute to the achievement of our energy security and diversity goals, and help

the U.S achieve its economic competitiveness objectives as a leader in the export of advanced energy technologies.

Increasing competition in electricity markets, as envisioned in the California Commission's proposal, may make it more difficult for electric service providers to participate in research and development programs for emerging energy technologies with long-term pay-offs. Evidence for this can be found in the lower level of funding for research and development by non-utility energy service suppliers.

We urge the Commission to consider the impacts of its reform proposals on long-term projects for development of new technologies, such as renewables and fuel cells, and to what policies and programs may be needed to ensure that industry support for this important economic competitiveness goal is sustained.

6. _Equity_. In its proposal, the Commission affirms its intention to protect ratepayers from cost-shifting and cross-subsidies and to protect the financial health of utilities. However, it is unclear from the proposal as currently drafted how these goals would be accomplished. From the point of view of consumer equity, the Department particularly questions how the Commission will develop lean but effective administrative procedures to prevent cross-subsidies and self-dealing by

utilities that provide electric service in competitive markets as well as in non-competitive markets.

On the other hand, from the point of view of equity among suppliers, it seems unfair for one supplier--the utility--to face an obligation to serve customers who return to utility service from direct access service. This element of the Commission's proposal seems inconsistent with development of competitive markets and would logically tend to encourage utilities to maintain chronic excess generating capacity and to encourage aggressive consumers to game the system.

We urge the Commission to adopt mechanisms that promote rational exit and return rules (or agreements) that align with utility planning requirements. The Department believes that care should be taken to develop and implement a consistent and comprehensive proposal that minimizes the potential for distortions and fairly allocates the benefits and costs of expanded competition.

7. Stranded assets. The Commission proposes to measure and recover costs associated with stranded assets, which it terms "uneconomic generating assets," from direct access and utility service customers. However, it is unclear how the Commission's proposed method for calculating the cost of uneconomic generating assets would work and how other types of stranded costs that could arise (such as decommissioning costs for nuclear

generation, fuel supply contracts, or costs associated with energy conservation and efficiency programs) would be addressed.

Moreover, the Commission proposes to recover these costs through a "competition transition charge" assessed as part of each customer's demand charge. Again, it is not clear how this charge would be calculated or assessed against each customer. The Commission needs to ensure that this charge is calculated accurately and assessed to all customers fairly and in a way that prevents customers from escaping this charge. Also, the Commission should explicitly consider if other assets should be included as "uneconomic," and whether all uneconomic asset costs should be paid by consumers, by shareholders, or apportioned between these groups in some way.

We also recommend that the Commission consider making the transition charge part of a commodity charge, as opposed to a fixed charge; this would help to ensure rate continuity and provide continuing incentives for energy efficiency.

8. Integrated resource planning (IRP). DOE agrees with the Commission's conclusion that there is no inherent conflict between competition and integrated resource planning. At the same time, however, a competitive market for electricity services will not necessarily fulfill the functions of IRP in ensuring a balanced, integrated approach to utility resource planning. In

order to retain the benefits of IRP, the Commission may need to adopt a regulatory structure that explicitly incorporates IRP principles.

DOE recognizes that there is widespread dissatisfaction with the Commission's existing Biennial Resource Plan Update (BRPU) process. As an IRP process, the BRPU is cumbersome and inflexible and represents a "command and control" approach to resource planning which is clearly obsolete in today's more competitive environment. We are concerned, however, that the proposed "let the market decide" approach to IRP may fail to adequately balance system requirements and societal goals associated with the IRP process. For example, it is hard to imagine how a state could approve a new power plant project in the face of typical public opposition if there is not clear evidence that the project is needed, is least-cost, and is environmentally preferable to alternatives. While the Commission insists that it is not abandoning IRP principles, it is not clear how these goals will be achieved in the context of a more competitive market.

Easing the existing Update process does not necessitate eliminating regulatory review of utility resource planning altogether. PBR proposals currently before the Commission contain features that are consistent with IRP principles, such as decoupling mechanisms and incentives for bill minimization. It appears that these PBR proposals could form the basis for a new performance-based approach to resource planning. Further development of PBR to encourage good portfolio management and environmental mitigation could make it a valuable tool for achieving the goals of IRP without the burdensome features of the BRPU.

Market forces alone are unlikely to recognize the full value of renewable resources. While we, like the Commission, are intrigued by "green electric service" opportunities to interested customers, we are not yet confident that this approach will adequately incorporate into utilities' resource decisions all of the external benefits to the state, the region, and the nation that renewable resources offer.

9. Demand-side management (DSM). The implications of the Commission's proposal for the future of cost-effective demand-side management (DSM) appears to be one of the most uncertain aspects of the entire proposal. From the Department's point of view, California's leadership in energy efficiency deployment is a critical reason why energy expenditures per customer have been declining and are now close to the national average, even though California's electricity rates are high. This energy efficiency helps California--like the rest of the nation--achieve greater productivity.

In its proposal, the Commission suggests that a competitive retail electricity market could offer new opportunities for pursuing DSM. Utilities and competitive service providers might offer packages to direct access customers that include DSM services. DOE finds this argument worthy of exploration. However, it is unclear whether a vigorous energy services market would develop in a direct access environment due to market forces alone, or how performance-based ratemaking coupled with a more competitive retail electricity market would affect incentives for utilities and other providers to pursue DSM.

The Department suggests that the Commission consider three concerns in assessing the likely effects of its proposal on DSM. First, many current DSM programs are justified economically in part on long-term system-wide benefits accruing to the utility's entire customer base (i.e., an overall reduction in long-term system costs). In a system with strictly short-term marginal cost-based rates, it is difficult to imagine that investments in efficiency--like other investments with long-term paybacks--will take place in amounts consistent with current levels. The evidence implies that the vitality of today's energy efficiency market is not likely to apply to a future market where the focus is on short-term investments and a lower level of involvement by the utility.

We state this caveat for another reason as well. Today's vibrant energy efficiency market hinges on the critical role that utilities play in financing efficiency investments, using ratepayer as well as shareholder capital. If competitive pressures, as contemplated in the Commission's proposal, reduce the utility's willingness to commit this capital, or significantly raise the cost of the capital, the market will remain vibrant only if the Commission creates other financing and delivery mechanisms, functionally equivalent to those the utility now provides.

Our second DSM concern is that future DSM services offered by utilities and other service providers to direct access customers would likely place greater emphasis on load management (reducing peak kilowatt load) than on energy efficiency (saving kilowatt-hours). Because load management tends to shift loads rather than reduce energy consumption, it generally does not reduce air emissions such as SO2, NOx, and CO2, and may even increase them. Thus it would be all the more important for the Commission to develop policies that ensure the environmental accountability of electricity producers.

For several reasons, then, maintenance of the current level of DSM activity probably would require development of new institutional structures for delivery of DSM services. The Department recommends that the Commission work with California utilities and other parties, including DOE, to development mechanisms to achieve these goals in a manner that is consistent with the new competitive paradigm.

Our third DSM-related concern pertains to the Commission's proposal to eliminate the existing "decoupling" mechanism known as the Energy Rate Adjustment Mechanism (ERAM) in favor of a net lost revenue adjustment (NLRA). By making utilities indifferent to sales growth, ERAM removes a substantial disincentive to investments in energy efficiency. In this regard, our earlier comments (in subsection IV. 2) about the importance of DSM programs to the success of the President's Climate Change Action Plan warrant additional emphasis here.

The Department believes that elimination of ERAM would substantially restore the link between the utilities' sales and earnings. Utilities' profits would be protected only against identifiable effects of certain DSM programs, not against broader energy efficiency initiatives. Unlike NLRAs, ERAMs automatically credit the utility for all conservation, thereby avoiding a contentious measurement procedure. Given the Commission's stated concern about minimizing cumbersome regulatory processes, an ERAM mechanism appears to offer a significant advantage over the NLRA.

VI. Conclusion

To summarize:

1. The Department of Energy is in agreement with the Commission's major goals.

2. The proposal itself is bold, innovative, and extremely significant for the respective economies of the state of California, the western United States as a region, and for the nation as a whole.

3. The Commission may lack the authorities needed to implement all components of the existing proposal. There are many legal uncertainties and opportunities for parties to challenge the Commission's proposed actions, particularly concerning the respective roles of federal and state regulatory bodies in the electricity sector. Resolution of these uncertainties through the courts could take several years.

4. On the other hand, it appears to the Department that the Commission can accomplish much of what it has proposed using its existing authorities.

5. Accordingly, the Department urges the Commission to consider

moving forward only with those parts of its proposal that are clearly within its existing authority--i.e., performance-based ratemaking, rate design improvements, making integrated resource planning and demand-side management more market-driven, and promotion of competition in wholesale markets--and not direct access. We also urge the Commission to work with other entities to seek clarification of the uncertainties that pertain to the remainder of its proposal.

6. The Department would be pleased to work with the Commission and other entities to clarify and resolve these uncertainties.

7. If, on the other hand, the Commission chooses to go forward with the complete proposal, the Department would support the proposal if nine "key design requirements" were suitably addressed and resolved. That is, the design of the proposal must ensure that broad public policy objectives will in one way or another continue to be met in the following areas:

    - Economic efficiency/industrial competitiveness;
    - Environmental protection;
    - System reliability;
    - Fuel diversity and renewables;
    - Research and development and use of new technologies;

- Equity;
- Stranded assets;
- Integrated resource planning; and
- Demand-side management.

Susan F. Tierney

Susan F. Tierney
Assistant Secretary
Office of Policy, Planning
and Program Evaluation

Robert R. Nordhaus
General Counsel

Technical and Financial Assistance

The technical and financial assistance program, which includes the low income weatherization program, other grant programs, the inventors program and international market development programs is funded at $325,981,000 in the budget request as compared with $319,727,000 in fiscal year FY 1995 and $293,682,000 in fiscal year 1994.

International Market Development

The international market development program contains an increase of $2,227,000 in the budget request. That's a 77% increase in funding over fiscal year 1995.

Question: What are you doing in fiscal year 1995 in your international market development program? ($2,907,000 in '95 as compared with $704,000 in '94 - budget p. 534).

Answer: In fiscal year 1995, the international market development program supports the activities of the Committee on Energy Efficiency Commerce and Trade (COEECT), the Asia Pacific Economic Cooperation (APEC) for which the Department has chaired the energy efficiency activities, the Center for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET), the Greenhouse Gas Technology Information Exchange (GREENTIE) (the Department's representative acts as vice-chair to these two International Energy Agency (IEA) activities whose primary functions are to inform the developing world of the uses of energy efficiency technologies and U.S. vendors of those products and services), and the Energy Efficiency Centers which provide information and training on the efficiency technologies and facilitate U.S. industry contacts within their respective regions. These various activities are all coordinated with industry through the private sector's Energy Efficiency Export Council (EEEC).

Question: What is the Committee on Energy Efficiency Commerce and Trade (COEECT)?

Answer: The Committee on Energy Efficiency Commerce and Trade (COEECT) is an interagency working group, authorized under Section 1207 of the energy Policy Act of 1992, of 15 Federal agencies which work closely with each other and U.S. energy efficiency industries to coordinate the actions and programs of the Federal Government affecting the export of energy efficiency products and services. COEECT is analogous to the Committee on Renewable Energy Commerce and Trade (CORECT) which coordinates Federal activities related to the export of renewable energy products and services.

Question: What funding, other than energy conservation funding supports this program? Please provide funding estimates by funding source for the record.

Answer: While the efforts of the 15 Federal member agencies are coordinated through COEECT, each agency expends its own funds for their individual export assistance efforts. COEECT activities are supported solely by energy conservation funding

Question: What are you doing with the $1,116,000 provided for COEECT in fiscal year 1995?

Answer: In fiscal year 1995, COEECT is assessing markets and identifying projects in areas of interest to U.S. companies, specifically in Eastern Europe and the Former Soviet Union, Latin America, and Asia. COEECT is attempting to make financing easier to obtain for U.S. companies attempting to do business in the international marketplace. Finally, COEECT is focusing on information collection and dissemination on policies to promote U.S. energy efficiency products and services.

Question: What would you do with the $1,868,000 requested for COEECT in fiscal year 1996? Please provide a side by side comparison of projects and associated funding in fiscal years 1995 and 1996.

Answer: In so far as COEECT works very closely with the U.S. efficiency industry representatives in developing its strategies and workplans, the specific activities envisioned for fiscal year 1996 have not yet been finalized. Activities begun in fiscal year 1995, however, will be continued and additional emphasis will be placed on expanding export assistance in the Asian market in accordance with industries expressed needs. In fiscal year 1994, COEECT was established and in fiscal year 1995 identified the following activities and projects to support industries' export opportunities - a) Market assessment and project identification in Eastern Europe and the Former Soviet Union, Latin America, and Asia; b) Explore financing mechanisms for energy efficiency projects in non- U.S. markets; and c) Develop information databases for dissemination to U.S. industry.

You established several new programs in international market development in fiscal year 1995. Each of them is proposed for expansion in fiscal year 1996. They include the Asia Pacific Economic Cooperation, the Greenhouse Gas Technology Information Exchange, the Center for the Analysis and Dissemination of Demonstrated Energy Technologies, and Energy Efficiency Centers.

Question: How do each of these new programs differ from the COEECT program and from each other?

Answer: Prior to addressing this question substantively, there is an apparent misconception that the referenced international market development programs are "new" in fiscal year 1995. The Department's Asia Pacific Economic Cooperation (APEC) involvement began in fiscal year 1992 and the Department has chaired the energy efficiency subcommittee for the past two years. The Greenhouse Gas Technology Information Exchange (GREENTIE), an International Energy Agency (IEA) annex, has been directed and funded by the Department's Office of Policy since fiscal year 1993. The Center for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET), another IEA annex, has been a Department activity since 1983 and had formerly been funded by the Office of Buildings Technology. The Energy Efficiency Centers were begun in fiscal year 1990 and had been core funded by U.S. AID, EPA and the Department. **In fiscal year 1995 these ongoing programs were consolidated under the international market development line item budgetary request for the first time.** These programs differ from, but complement, COEECT in several ways. APEC is a cooperative effort by its 16 member countries to promote economic well-being in the Asia-Pacific region. The APEC Energy-Efficiency subcommittee, which the Department chaired from 1992-1994, holds workshops and seminars of energy-efficiency technologies; develops best practices manuals for the region; develops energy-efficiency databases\information systems which include U.S. vendors lists; and implements joint energy efficiency demonstration projects with U.S. industry participation. These activities assist regional energy decisionmakers to become familiar with the benefits of U.S. technologies. GREENTIE facilitates the dissemination of information on U.S. vendors of greenhouse gas mitigation technologies and identifies specific projects in six targeted countries (South Korea, Hungary, Poland, Tunisia, Indonesia and Mexico). CADDET also assists in the dissemination of information on U.S. technologies and provides U.S. companies with insight into unique technological applications in other member countries. The Energy Efficiency Centers provide regionally focused export assistance to U.S. firms and facilitate contacts with local decisionmakers as well as assist in training activities.

COEECT cooperatively establishes the overall export strategy for energy efficiency technologies in close collaboration with the Trade Promotion Coordinating Committee of the Department of Commerce. COEECT provides the framework for a coordinated Federal Government response to the export assistance needs of the U.S. energy efficiency industries.

Question: For the record please provide the same information for each of these new programs as requested for the COEECT program.

Answer: APEC, GREENTIE, and CADDET receive additional funding in the form of dues from other member countries. Only one Energy Efficiency Center is currently receiving funding from U.S. AID ($200,000) and it is not known if this funding will continue in fiscal year 1996.

In fiscal year 1995, APEC funding is being provided for a workshop on Urban Transportation, a Demand Side Management workshop in China, a Waste Heat Recovery project and related technical support. The APEC activities for fiscal year 1996 have not been finalized by the APEC member countries. GREENTIE, in fiscal year 1995 is collecting information for its directory and database. In fiscal year 1996, GREENTIE will continue to develop its supporting network, including an interface with Internet, and develop specific projects in the six pilot-test developing countries. In fiscal year 1995, CADDET continues to gather information and to create brochures and analyses for dissemination at conferences, workshops, and by request. For fiscal year 1996, CADDET member countries have not yet finalized their workplan, however, additional commercially viable technology application information will be sought and disseminated to the member countries and then made available on Internet to the developing world through GREENTIE. In fiscal year 1995, the Energy Efficiency Centers continue to assist U.S. firms seeking export opportunity information and contacts in the various regions. In fiscal year 1996, the Energy Efficiency Centers will also be involved in the training of local energy decisionmakers on the benefits of U.S. energy efficiency technologies and their various applications.

Inventions and Innovation Program

Question: Funding for the Inventions and Innovation program gets a 51% increase in the budget request. ($5,799,000 in '95 and $8,762 in '96 -- budget p.540) What major technological breakthroughs have been realized through your inventions innovation program?

Answer: It is important to understand that this program is not a basic research program, but one that seeks to identify products and processes that have the promise of solving a problem and have an impact in energy savings or reducing the cost of producing energy. As such, we have technical product breakthroughs not technological breakthroughs. Oak Ridge National Laboratory has documented that through 1992, 131 of 557 technologies supported by the Energy-Related Inventions Program have reached the marketplace; the products that we assisted were developed by very small companies and independent inventors. Each of these represents a technical product breakthrough in that each contributed to a reduction in the cost of producing energy or provided a way to use energy more efficiently. Examples include: a hydraulic casing stabber that adds both speed and safety to the tasks of joining drilling pipe casings at an oil rig; a compressor control system for natural gas pipelines which provides integrated control of compressor speed and output pressure, allowing the compressor to operate more efficiently; and a modification of an existing electric steam turbine packing ring that reduces turbine efficiency loses due to start-up, thermal distortion, and shaft vibration. The most recent data (1994) show that cumulatively, 4 of this program's technologies have saved nearly one-half quad of energy and nearly 4 million tons of carbon emissions. As more of our technologies reach the marketplace, these cumulative savings will continue to grow at increasing rates.

Question: How much of the proposed increase in the Inventions and Innovation program for fiscal 1996 is attributable to the PNGV initiative?

Answer: Approximately 65 percent of the increase will be used to provide evaluations and grants to PNGV identified technologies.

Question: How will you use the balance of the funding increase?

Answer: The balance of funds will be used for the Innovative Concepts Program support of pollution prevention technology development.

Question: How did you arrive at your estimates of increased workload for this program?

Answer: The Energy-Related Inventions Program was established in 1974 and is a joint program between the National Institute of Standards and Technology (NIST) and the Inventions and Innovation Program. The workload at NIST is based on an anticipated number of submissions to the program; the workload at the Inventions and Innovation program is based on an expected rate of recommendations. Based on our experience in this program we know that an expanded outreach effort will increase both the quantity and quality of the submissions resulting in a greater number of recommendations for funding. With this experience we can estimate that the expanded outreach effort will increase program input to NIST by 50 percent and the PNGV initiative will increase the program input to NIST by 25-30 percent.

Question: If you were held to the fiscal year 1995 funding level in fiscal year 1996 for the inventions and innovation program, how would you change the proposals in the key activities in your budget?

Answer: The major new thrust of the FY96 key activities was in support of PNGV and pollution prevention. Should additional funding not be forthcoming, we would support the core areas of the Inventions and Innovation Program. We would continue to reduce the growing backlog of unfunded recommendations and would not emphasize the areas of pollution prevention and PNGV.

Municipal Energy Management

Question: What are you doing to integrate the municipal energy management program with the State energy conservation program? (budget p. 545)

Answer: For some time we have been actively encouraging State awareness of and partnership in the Municipal Energy Management Program (MEMP). Some States have already incorporated MEMP into their State Energy Conservation Program (SECP) plans. State support often takes the form of actual partnership, e.g., SECP offices in Florida, Illinois, Maryland, New Mexico, Oregon and Vermont participated in MEMP projects in FY 1994. States also take an active role in disseminating project results. Also, the Department's Regional Support Offices have helped local jurisdictions find project partners and assisted in the development of project proposals.

Question: Why are these programs funded separately?

Answer: The MEMP, which is funded under a separate line item in the Interior appropriation, is different from the SECP in that it does not utilize formula grants, but rather uses a competitive selection process carried out by the Urban Consortium Energy Task Force. Further, MEMP grants are made directly to cities and counties rather than to States, as is the case in SECP. The competition for MEMP awards emphasizes the leveraging of DOE funds through financial and in-kind contributions by the recipient and its partners, partnerships with private and public sector entities that provides a strong base for successful implementation and follow-on work, and selection of projects that have the greatest replication value to other communities.

Question: What savings could be achieved through the consolidation of these two programs?

Answer: The MEMP, like SECP and other EE grant programs, is being analyzed to determine its streamlining potential. A key issue to consider here is whether the savings in consolidated administrative costs would outweigh the disparate nature of the MEMP and SECP program approaches and target audiences.

Weatherization Assistance Program

Question: An increase of $2,675,000 is requested for the weatherization assistance program. The House has recommended rescinding $14.8 from this program in fiscal year 1995. A total of $229,046,000 is requested for weatherization in fiscal year 1996. (budget p. 551) How much does it cost to weatherize the average home?

Answer: The average cost per home for homes weatherized under the Weatherization Assistance Program is currently $1750. The actual cost of any given home will depend on the results of the energy audit performed which will indicate what are the most cost-effective measures for a particular home.

Question: What types of investments are most common?

Answer: The energy audit performed on homes to be weatherized dictates the most cost-effective measures to be installed. Consequently, not all homes receive the same materials or measures; however, the most common measures installed are air-infiltration measures such as, attic and wall insulation, weatherstripping, and caulking. The condition of the heating or cooling unit will determine whether the unit receives a tune-up or is replaced.

Question: How do you ensure that these funds are used strictly for weatherization and not for more costly renovations?

Answer: DOE Weatherization program regulations prohibit the use of funds for home rehabilitation. During the initial energy audit conducted, those homes which are determined to need extensive rehabilitation work will be referred to the appropriate local housing agency as a candidate to receive those necessary repairs prior to any weatherization work. Further, Weatherization program regulations restrict incidental repairs to those which are necessary before, or because of, the installation of weatherization materials.

Question: In theory you could replace all of the windows and doors in a home and put in a new heating and cooling system and declare the home weatherized. Are these kinds of activities funded through the weatherizaiton program? Please explain.

Answer: Replacement windows, doors, heating and cooling system repairs are allowable weatherization measures. The energy audit performed on each home to be weatherized dictates the most cost-effective measures to be installed, so consequently not all homes receive the same materials. The condition of the heating and cooling unit will determine whether the unit receives a tune-up or is replaced.

State Energy Conservation Program

Question: An increase of $2,158,000 is requested for grants to the 50 States, DC and the 6 territories for State Energy Conservation Programs. ($22,493,000 in '95 and $24,651,000 in '96 -- budget p. 553) How do the States and territories use the funds they receive from the State energy conservation program?

Answer: The States use the funds they receive from the State Energy Conservation Program (SECP) to develop and implement diverse energy efficiency and renewable energy programs that reflect their unique energy needs, priorities, and opportunities. Since 1983 the States have implemented over 8,000 individual projects and leveraged $19 non-federal dollars for every federal dollar spent for direct program use. The States spend almost 50 percent of their SECP funds supporting and implementing new energy efficiency/renewable energy technologies across the energy end-use sectors. The States have reported that 15 percent of SECP funds are targeted to the residential sector, 42 percent to the commercial sector, 13 percent to the industrial sector, and 30 percent to the transportation sector.

Question: Why is this a Federal responsibility?

Answer: Energy efficiency and renewable energy development is a national goal which is tied to national security, the balance of payments, industrial efficiency, the environment, and competition in the global marketplace for U.S. energy technologies. The SECP provides a nationwide framework for the implementation of energy initiatives to support this goal and the needs of the States to plan, coordinate and implement energy policy. This Federal/State partnership accommodates the wide diversity among States and allows them to define and deal with their State specific issues and policies.

Question: How much do the States contribute in cost-sharing?

Answer: The States are required to provide a 20 percent match for Federal SECP funds. In addition, the States have expended over $1.1 billion of their oil overcharge funds in SECP activities. It should be noted, however, that because the States' oil overcharge funds are rapidly diminishing, this high level of supplementation to SECP cannot be sustained.

Question: How is the work performed with these grants different from that done under the institutional conservation program grants?

Answer: SECP activities are aimed at all sectors of the economy, and are focused on implementation of new technologies and State-driven activities designed to meet a broad range of energy needs within each State. The Institutional Conservation Program specifically targets certain types of energy measures in public and private non-profit schools and hospitals.

Institutional Conservation Program

Question: What is the cost share in the institutional conservation program and who shares in those costs?

Answer: Under the traditional program, grants are awarded to schools and hospitals on a 50/50 percent cost share basis, with the Institutional Conservation Program providing 50 percent of the funding, and the institutional grantee providing the remaining 50 percent either in cash, labor and/or materials on hand.

In addition, the State Energy Efficiency Programs Improvement Act of 1990 provides States an opportunity to use a percentage of the ICP allocation to fund marketing and/or program assistance activities and technical assistance, with the States providing funding from a variety of non-Federal sources, such as State loans, private sector loans, energy service companies and utility funds for the energy conservation measures.

Question: Why is this program a Federal responsibility?

Answer: The Institutional Conservation Program was authorized by the National Energy Conservation Policy Act of 1978, as amended by the State Energy Efficiency Programs Improvement Act of 1990. The program was predicated on findings that schools, hospitals and public care institutions were major consumers of energy and were especially burdened by rising energy prices and fuel shortages. The findings further stated that, while substantial energy conservation could be achieved in schools and hospitals through implementation of energy conservation maintenance and operating procedures and the installation of energy conservation measures, in many instances the institutions lacked the capital resources and needed financial assistance in order to achieve the energy savings. As an example, the General Accounting Office issued a report, dated February 1995, stating there is approximately $112 billion worth of structural and operational repairs needed for the nation's elementary and secondary schools.

Question: Why is funding for this program, which provides grants for schools and hospitals, decreasing while increases are proposed for the weatherization and State energy conservation programs? ($29,004,000 in '95 and $26,849,000 requested for '96--budget p. 557)

Answer: In 1993, new regulations were promulgated for the Institutional Conservation Program, giving the States greater flexibility and capability to leverage third-party funding for installation of energy conservation measures in schools and hospitals. This makes it possible for States to accomplish as much or more of the program's objectives with fewer federal dollars. The additional funding for the State Energy Conservation Program is consonant with giving the States the most flexible possible use of federal funds to support the energy efficiency programs that are highest priority for their individual circumstances. The Weatherization Assistance Program increase was necessary to support implementation of the new funding allocation formula without decreasing the existing level of effort in cold-climate States. Neither the SECP nor the Weatherization increase is enough, however, to offset the decreases in availability of Petroleum Violation Escrow funds for support of these programs. Thus, in all the programs, enhancement of State capabilities to leverage non-federal funds is a major emphasis of technical assistance activities.

Question: To what extent could you combine the institutional conservation program, the State energy conservation program and the municipal energy management program into a single program, with the requirement of a 50% cost share? Please explain.

Answer: As part of its streamlining effort, EE is looking at the feasibility of combining the Institutional Conservation Program (ICP) and the State Energy Conservation Program (SECP). ICP and SECP appear to be good candidates for combining into a block grant setting. One of the consolidation issues would be how to mesh the various State match requirements.

Question: What savings could be realized from such a consolidation?

Answer: We anticipate that some savings would accrue from combining these programs. The efficiencies gained by consolidating the programs would probably result in economics of scale and some administrative savings.

Policy and Management

Question: Policy and management is proposed for a 36% increase in funding ($8,342,000 in FY 1995 and $11,332,000 in FY 1996 - budget p. 563). How do you justify an increase of $2,990,000 for policy and management?

Answer: The majority of the increase will support planning, analysis and evaluation activities at the EE corporate level. Policy and Management funding directly supports identification and analysis of strategic issues; development of the EE Strategic Plan; support to multiyear planning by the EE sector organizations; EE corporate budget formulation and analysis; estimation of benefits of all EE programs; analysis of policy issues; development of evaluation metrics for EE programs; performance measurement for those programs; and planning and implementation of cross-cutting programs. These activities are required by legislation and executive order. The Government Performance and Results Act (GPRA) in particular requires are executive branch organizations to develop strategic and multiyear plans, establish performance metrics and measure progress. We have made progress in these areas in the current year, but producing quality plans and performance measures to meet both the GPRA requirements and OMB planning guidelines requires a substantial increase in funding. This investment will result in efficiency savings throughout the EE organization that result in increased program synergy, return to the taxpayer, and program cost savings far in excess of the increase. This increase therefore, will enable EE to adopt sound business practices called forth under GPRA that will result in real money savings at the program level.

Question: What specifically would you do with these funds?

Answer: Specifically, the increase will be used for technical expertise at the DOE Laboratories and other contractors which will assist in a number of high-priority areas, such as: Quality Metrics; performance-based budgeting; Quality Management; EPAct Climate Change Action Plan implementation; policy, planning, and analytical support to the Assistant Secretary to provide a comprehensive framework through strategic and multiyear planning, to provide a coherent modeling capability to integrate the estimates of individual projects and programs, and to undertake major policy-related activities for crosscutting Energy Efficiency initiatives such as CCAP, Partnership for a New Generation of Vehicles, Industries for the Future, and others.

Also, the funds will support technical evaluation, analysis, analytical support will be performed to identify R&D needs and technology deployment opportunities; management activities ranging from policy development and long-range planning to general administration functions such as: preparation of technical research and development plans; review, evaluation, and support for research proposals; and oversight and implementation of cooperative university and industrial research programs. The work includes activities conducted in response to the increased Departmental requirements for strategic and multi-year planning, development of evaluation indicators, and internal quantification of likely program benefits. Some of the funds will be used by the EE sectors to incorporate feedback on EPACT and CCAP implementation from the Congress and non-government constituents into the planned execution of these programs. As EPACT-related program responsibilities are undertaken, corresponding support is needed in order to ensure sound program design, implementation, and performance monitoring.

Climate Change

Question: Many of your proposed increases are tied to the climate change action plan. For the record, please provide a list comparing fiscal year 1995 and 1996 funding for each of the projects in this plan. If funding is being provided by a source other than energy conservation please note those amounts as well.

Answer: The attached table presents the FY 1995 appropriations and FY 1996 request for the Climate Change Action Plan - or Energy Partnerships for Strong Economy - voluntary partnership actions. The total for the Interior and Related Agencies Appropriations Subcommittee is $40.9 million in FY 1995 and $78.0 million in FY 1996. The increase is carefully targeted to ensure the maximum return on investment both in terms of environmental benefits to the nation and real financial returns to our partners - including an increase in Rebuild America, funding of new key buildings initiatives and funding for high-priority initiatives not funded in FY 1995.

Development Appropriations

In addition to the Energy Conservation funding, the Energy and Water Development Appropriations Subcommittee funds the renewable energy initiatives in the plan. The total was $58.0 million in FY 1995 (largely for renewables deployment) and $96.2 million in FY 1996 (renewables deployment, the Bioenergy initiative and U.S. International Joint Implementation).

Climate Change Action Plan Budget Cross Cut
Office of Energy Efficiency and Renewable Energy

Action(a)	FY 1995 Approp.	FY 1996 Request
Rebuild America	$ 8.5	$ 19.8
Commercial Market Transformation	$ 3.8	$ 3.8
Energy Value Homes		
Information/Education	$ 0.0	$ 2.5
Residential Market Transformation	$ 5.2	$ 6.1
Home Energy Rating Systems/Energy Efficient Financing	$ 1.0	$ 1.5
Cool Communities	$ 0.0	$ 2.2
State Building Standards	$ 6.5	$ 8.4
DOE/HUD public housing efficiency	$ 0.0	$ 5.0
Commercial buildings design fee reform	$ 0.0	$ 1.0
Superwindows collaborative	$ 0.0	$ 1.5
Advanced lighting collaborative	$ 0.0	$ 1.0
SBA/ESCO financing initiative	$ 0.0	$ 1.0
Motor Challenge	$ 3.0	$ 5.7
Industrial Market Transformation	$ 1.5	$ 2.3
Expand EADCs	$ 0.0	$ 1.0
Expand NICE3	$ 3.0	$ 5.5
Renewable Deployment Collaboratives (Energy & Water	$54.8	$ 61.5
Expand IRP	$ 1.8	$ 3.0
Landfill methane technology RD&D (Energy & Water)	$ 0.0	$ 1.9
Bioenergy initiative (Energy & Water)	$ 0.0	$ 16.2
Climate Wise	$ 4.0	$ 2.0
Climate Challenge (Energy & Water)	$ 0.0	$ 2.0
U.S. International Joint Implementation	$ 3.2	$ 14.6
	$99.0	$175.5
Interior Subcommittee total	$40.9	$ 78.0
ESR&D Subcommittee total	$58.0	$ 96.2

a) All actions funded under Energy Conservation except where noted.

Climate Change

Question: How would each of these programs differ if funding were limited to the fiscal 1995 level in fiscal year 1996?

Answer: If FY 1996 funding for Climate Change - or Energy Partnership - programs is limited to FY 1995 levels, DOE will have no chance of meeting it's commitments under the Climate Change Action Plan and the U.S. will fall significantly short of it's international commitment to reduce greenhouse gas emissions to 1990 levels by 2000. Our leadership position on international environmental issues will be compromised.

In addition, our partners and the economy as a whole would lose some of the huge economic benefits accruing from this actions. Energy cost savings to businesses and consumers would be cut by $2 billion in 2000 alone and at least 20,000 jobs would be lost. Of all the programs in the Interior and Related Agencies accounts, these Energy Partnership programs produce by far the highest economic benefits to businesses and consumers. The investments in energy efficiency throughout the nation resulting from these programs produce these huge benefits not just in a single year by year after year.

The FY 1996 funding request for Climate Change was carefully developed to fund only those actions having a high return not only in terms of emissions reductions, but also in terms of the economic benefits to businesses and consumers. Funding at only the FY 1995 level would permit the Department to move forward with the core actions, but businesses and consumers would miss the huge opportunities to lower energy bills, cut production costs and prevent pollution. For example, loss of funding for the DOE/HUD initiative alone would result in the loss of over $100 million worth of lower public housing energy bills and therefore lower costs to the U.S. Treasury.

At flat FY 1995 funding levels, most of the new buildings initiatives would not be funded. The DOE/HUD initiative to retrofit public housing with energy efficient technology would be maintained, but at a much lower level. This is because of the potential of this initiative to leverage enormous public and private funds and achieve huge results in terms of both environmental benefits and direct savings to the taxpayer of facility operating costs. In addition, most of the increases in selected programs planned for FY 1996 would be cut, although some increases in high priority programs such as Rebuild America, Motor Challenge and the Affordable Housing Partnership would be maintained by funding cuts outside of the Energy Partnerships for a Strong Economy programs.

Question: In some cases would you recommend discontinuing some of the programs rather than holding funding for each element at the fiscal year 1995 level? Please explain.

Answer: The only programs in this area that we would likely discontinue are 2 to 3 of the modest new pilot buildings initiatives. In order to at least partially fund the remaining new initiatives as well as the increases in selected high-return programs, funding cuts in other areas would be sought.

Joint Funding with Other Federal Entities

Question: For the record, please provide a list of projects in fiscal years 1995 and 1996 that are jointly funded with other DOE or other Federal entities. For each project, identify the amount each organization is funding and indicate, when funding is in more than one appropriations bill, the fiscal year 1995 funding and fiscal year 1996 request in each appropriation.

Answer: The following is a list of projects in fiscal years 1995 and 1996 that are jointly funded with other DOE or other Federal entities.

FY 1996 JOINT DOE/OTHER AGENCY PROJECTS

($ 000)

KEY ACTIVITY PROGRAM/PROJECT	AGENCY	FY 1995				FY 1996			
		EE	OTHER DOE	NON-DOE	TOTAL	EE	OTHER DOE	NON-DOE	TOTAL
BUILDINGS SECTOR									
Building Systems									
Rebuild America	EPA	8,500		UNK	8,500+	19,800		UNK	19,800+
Commercial Buildings	NIST	340		300	640	340		300	640
Commercial Buildings	EPA	100		100	200	100		100	200
Exemplary Buildings	DOI/USPS	140		2,240	2,380	100		2,000	2,100
Retrofit Technologies	EPA	85		225	310	50		200	250
DOE-HUD Initiative	HUD	208		1,000	1,208	5,000		250,000	255,000
Building Envelope									
Windows and Glazings	EPA	50		100	150	50		100	150
Indoor Air Quality at LBL	EPA/NIH	1,200	672	300	2,172	1,000	730	350	2,080
Building Equipment/Heating and Cooling									
Thermal Distribution	EPA	385		225	610	385		225	610
Technology Partnership (CEE)	EPA	425		125	550	425		125	550
Refrigeration	NIST	540		900	1,440	540		900	1,440
Building Equipment/Lighting									
Lighting Information	EPA	50		100	150	50		100	150
Building Equipment/Appliances									
Technology Partnership (CEE)	EPA	425		125	550	425		125	550
TOTAL BUILDINGS SECTOR		12,448	672	5,740	10,360	28,265	730	254,525	263,720

FY 1996 JOINT DOE/OTHER AGENCY PROJECTS
($ 000)

KEY ACTIVITY PROGRAM/PROJECT	AGENCY	FY 1995				FY 1996			
		EE	OTHER DOE	NON-DOE	TOTAL	EE	OTHER DOE	NON-DOE	TOTAL
INDUSTRY SECTOR									
Industrial Waste/Waste Reduction									
NICE[3]	EPA	6,000		300	6,300	8,500			8,500
Cogeneration/Advanced Topping Cycles									
Advanced Turbine Systems	FE	18,900	37,800		56,700	27,540	44,000		71,540
Implementation and Deployment									
Technology Reinvestment Program - Energy Environment Manufacturing Technology Access	DOE EPA NIST	175		 875 690	1,740				
Industrial Assessment Centers	EPA	6,500		190	6,690	9,000		TBD	9,000+
Climate Wise (Climate Challenge DOE only)	EPA	1,990		3,600	5,590	2,000		TBD	2,000+
TOTAL INDUSTRY SECTOR		33,565	37,800	5,655	77,020	47,040	44,000	0	91,040
TRANSPORTATION SECTOR									
Alternative Fuels Utilization									
Military light duty fleet tests	AF	300		300	600	300		300	600
Clean fleet demonstration	EPA	516		200	716				
Heavy duty vehicle demonstration	DOI	200		600	800	300		600	900
Photochemical reactivity	EPA	250		250	500	250		250	500
Federal fleet vehicle acquisition	USDA	500		1,500	2,000	500		1,500	2,000
Federal fleet vehicle acquisition	USPS	7,875		31,500	39,375	7,875		31,500	39,375
Federal fleet vehicle acquisition	GSA	8,150		32,600	40,750	8,150		32,600	40,750

FY 1996 JOINT DOE/OTHER AGENCY PROJECTS

($ 000)

KEY ACTIVITY PROGRAM/PROJECT	AGENCY	FY 1995				FY 1996			
		EE	OTHER DOE	NON-DOE	TOTAL	EE	OTHER DOE	NON-DOE	TOTAL
Materials Technology									
Cost-effective machining of ceramics	DP ER	3,650	4,910 350		8,910	3,650	5,100 850		9,600
Cost-effective ceramics	NIST	750		750	1,500	950		950	1,900
Lightweight materials for transportation	ER Navy	11,750			11,750	16,900	1,000	1,000	18,900
Heat Engine Technologies									
Engine Support Systems Technology	DP ER	3,240	4,036 980		8,256	9,500	11,900 2,000		23,400
Lightweight diesel engine	Navy	750		250	1,000	1,000		250	1,250
NOx reducing catalyst	Navy	550		180	730	900		100	1,000
NOx reducing fuel additive	Navy				0	1,000		200	1,200
High pressure combustion research	ARPA	150		500	650	180		500	680
Electric and Hybrid Propulsion									
Lithium polymer battery research	ER					125	200		325
Power Electronic Building Blocks	DOD	1,000		10,000	11,000	1,000		11,000	12,000
TOTAL TRANSPORTATION SECTOR		39,631	10,276	78,630	128,537	52,580	21,050	80,750	154,380
TECHNICAL AND FINANCIAL ASSISTANCE									
International Market Development									
Kiev Energy Efficiency Center	AID			200	200	TBD			TBD
Inventions and Innovations									
Innovative Concepts Grants	EPA	250		250	500	450	250	250	950
TOTAL TECHNICAL AND FINANCIAL ASSISTANCE		250		450	700	450+	250	250	950+

Field Offices

Question: How many offices in the field support the energy conservation program?

Answer: The Energy Efficiency programs are implemented in the field at 17 DOE field components including six DOE Operations Offices, one Field Office, and ten Support Offices.

Question: Where are these offices, what functions do they perform, and how many people staff each of them?

Answer: The six Operations Offices are the Oakland Operations Office, Richland Operations Office, Albuquerque Operations Office, Idaho Operations Office, Oak Ridge Operations Office, and the Chicago Operations Office. Additionally, the Efficiency Programs are implemented by the Golden Field Office (in Golden, Colorado) and the ten Support Offices, all of which report to the Office of Energy Efficiency and Renewable Energy. The Support Offices are located in Boston, New York, Philadelphia, Atlanta, Chicago, Dallas, Kansas City, Denver, San Francisco, and Seattle.

The six Operations Offices and the Golden Field Office manage and administer the Management and Operating (M&O) contracts for the National Laboratories. They are also Federal managers for program planning and execution, budget and financial management, information resource management, site infrastructure and construction, environment safety and health, procurement oversight, work for non-DOE entities, and various other program functions. Additionally, the Operations Offices and the Golden Field Office manage a wide variety of Energy Efficiency programs which are contracted through commercial vendors, non-profit entities, and colleges and universities. These activities include all DOE actions, from initial solicitation through the business and technical management of each contract.

Each of the ten Support Offices (SOs) manage and administer three major grants programs: Weatherization Assistance, Institutional Conservation, and State Energy Conservation. The Support Offices also conduct outreach activities to leverage non-Federal resources and accelerate the deployment of Energy Efficiency and Renewable Energy technologies. In order to accelerate the deployment of these technologies, the SOs perform outreach, administrative, management and contracting functions for EERE programs such as Clean Cities and Motor Challenge. The SOs collaborate with State and local governments, other Federal agencies and the private sector to catalyze partnerships aimed at achieving EERE objectives.

The following information provides the staffing which supports the Energy Efficiency Programs.

DOE Field Components in Support of Energy Efficiency Programs

	Staffing (FTEs)		Adminstrative Costs ($ in Thousands)	
	FY 1995	FY 1996	FY 1995	FY 1996
Operations/Field Offices				
Oakland Operations Office	0	0	$0	$0
Richland Operations Office	0	0	0	0
Albuquerque Operations Office	2	2	170	170
Idaho Operations Office	4	4	340	340
Oak Ridge Operations Office	1	1	85	85
Chicago Operations Office	8	8	680	680
Golden Field Office	13	13	2,236	2,240
Total	28	28	3,511	3,515
Support Offices				
Atlanta Support Office	22	22	1,924	1,992
Boston Support Office	18	18	1,729	1,790
Chicago Support Office	18	18	1,766	1,781
Dallas Support Office	18	17	1,542	1,596
Denver Support Office	20	20	1,877	1,942
Kansas City Support Office	18	18	1,579	1,634
New York Support Office	16	16	1,726	1,786
Philadelphia Support Office	19	19	1,832	1,919
San Francisco Support Office	18	18	1,780	1,842
Seattle Support Office	17	17	1,624	1,680
Total	184	183	17,379	17,962
Total	212	211	$20,890	$21,477

Administrative costs for the Operations Offices reflect estimated Federal salary and travel costs. Data for the Golden Field Office and the Support Offices includes Federal salary and travel plus the costs of operating an office such as rent and utilities.

Question: What are the administrative costs associated with each of the offices?

Answer: The following information provides the estimated administrative costs which supports the Energy Efficiency Programs at these field components.

DOE Field Components in Support of Energy Efficiency Programs

	Staffing (FTEs)		Adminstrative Costs ($ in Thousands)	
	FY 1995	FY 1996	FY 1995	FY 1996
Operations/Field Offices				
Oakland Operations Office	0	0	$0	$0
Richland Operations Office	0	0	0	0
Albuquerque Operations Office	2	2	170	170
Idaho Operations Office	4	4	340	340
Oak Ridge Operations Office	1	1	85	85
Chicago Operations Office	8	8	680	680
Golden Field Office	13	13	2,236	2,240
Total	28	28	3,511	3,515
Support Offices				
Atlanta Support Office	22	22	1,924	1,992
Boston Support Office	18	18	1,729	1,790
Chicago Support Office	18	18	1,766	1,781
Dallas Support Office	18	17	1,542	1,596
Denver Support Office	20	20	1,877	1,942
Kansas City Support Office	18	18	1,579	1,634
New York Support Office	16	16	1,726	1,786
Philadelphia Support Office	19	19	1,832	1,919
San Francisco Support Office	18	18	1,780	1,842
Seattle Support Office	17	17	1,624	1,680
Total	184	183	17,379	17,962
Total	212	211	$20,890	$21,477

Administrative costs for the Operations Offices reflect estimated Federal salary and travel costs. Data for the Golden Field Office and the Support Offices includes Federal salary and travel plus the costs of operating an office such as rent and utilities.

Question: To what extent could some of these offices be eliminated, downsized or consolidated?

Answer: We believe that streamlining the grants process could permit some consolidation and downsizing of the ten regional Support Offices, without eliminating the customer outreach and technology deployment services that these Offices provide for Energy Efficiency and Renewable Energy programs. A small working group of DOE and State representatives is exploring the potential savings that might be realized.

Question: Could some headquarters functions be delegated to the field? If so, which ones and what are you doing to explore sure options as part of your administrative streamlining and reinventing government efforts?

Answer: There are some headquarters functions that could be delegated to the field. Project management functions, which benefit from direct interface with project partners and customers, are especially good candidates. We have asked all program units to evaluate their functions in terms of potential delegation to the field, as part of their internal planning process. In addition, we have just formed an in-house team with representatives from each sector, to explore such options across the board.

National Laboratory Funding

Question: To what extent is the level of National laboratory participation in your programs increasing in FY 1996?

Answer: Laboratory funding for Energy Efficiency programs increases an estimated $39.7 million, or 18 percent, from an estimated $216.2 million in FY 1995 to $255.9 million in FY 1996.

Question: Please provide for the record for 1994, 1995, and 1996 in the same fashion as in previous years (p. 1024-1026, 1995 hearing).

Answer: The following information reflects the actual and planned funding for Energy Efficiency programs at the National Laboratories.

Energy Conservation Lab Summary
(Dollars in Thousands)

	Total All Labs FY 1994 Actual	 FY 1995 Planned	 FY 1996 Planned
Sector Summary:			
Industrial Sector	$48,435	$53,253	$53,128
Buildings Sector	50,703	54,973	59,419
Transportation Sector	88,262	100,766	133,142
Technical & Financial Ast.	4,473	3,463	6,217
Utility Sector	3,700	3,700	4,000
Total Energy Conservation	$195,573	$216,155	$255,906

Energy Conservation Lab Summary
(Dollars in Thousands)

	Los Alamos National Lab			Sandia National Lab		
	FY 1994 Actual	FY 1995 Planned	FY 1996 Planned	FY 1994 Actual	FY 1995 Planned	FY 1996 Planned
Sector Summary:						
Industrial Sector	$4,290	$4,246	$2,900	$5,015	$5,104	$4,234
Buildings Sector	2	5	5	62	50	50
Transportation Sector	3,530	2,800	500	2,210	2,377	3,149
Technical & Financial Ast.	0	0	0	0	0	0
Utility Sector	0	0	0	0	0	0
Total Energy Conservation	$7,822	$7,051	$3,405	$7,287	$7,531	$7,433

	Ames Lab			Argonne National Lab		
	FY 1994 Actual	FY 1995 Planned	FY 1996 Planned	FY 1994 Actual	FY 1995 Planned	FY 1996 Planned
Sector Summary:						
Industrial Sector	$225	$225	$700	$8,339	$9,486	$13,381
Buildings Sector	0	0	0	2	5	5
Transportation Sector	0	0	0	8,780	6,964	8,165
Technical & Financial Ast.	0	0	0	200	400	102
Utility Sector	0	0	0	0	0	0
Total Energy Conservation	$225	$225	$700	$17,321	$16,855	$21,653

	Brookhaven National Lab			Nat'l Renewable Energy Lab.		
	FY 1994 Actual	FY 1995 Planned	FY 1996 Planned	FY 1994 Actual	FY 1995 Planned	FY 1996 Planned
Sector Summary:						
Industrial Sector	$0	$0	$0	$9,258	$10,290	$8,474
Buildings Sector	1,242	1,285	1,585	11,767	12,775	12,825
Transportation Sector	1,000	500	1,000	29,843	46,178	72,420
Technical & Financial Ast.	0	0	0	2,384	1,448	1,475
Utility Sector	0	0	0	1,300	1,300	1,200
Total Energy Conservation	$2,242	$1,785	$2,585	$54,552	$71,991	$96,394

Energy Conservation Lab Summary
(Dollars in Thousands)

	Idaho Nat'l Engineering Lab			Oak Ridge National Lab		
	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996
	Actual	Planned	Planned	Actual	Planned	Planned
Sector Summary:						
Industrial Sector	2,943	3,424	1,848	12,633	15,684	17,900
Buildings Sector	2	5	5	13,511	14,300	14,950
Transportation Sector	4,123	3,318	3,900	31,901	35,334	40,258
Technical & Financial Ast.	0	0	0	1,589	1,090	2,240
Utility Sector	0	0	0	1,000	1,000	1,200
Total Energy Conservation	7,068	6,747	5,753	60,634	67,408	76,548

	Pacific Northwest Lab			Lawrence Livermore Lab		
	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996
	Actual	Planned	Planned	Actual	Planned	Planned
Sector Summary:						
Industrial Sector	4,365	3,660	2,891	400	335	300
Buildings Sector	8,783	10,493	15,590	2	5	5
Transportation Sector	970	475	200	255	295	550
Technical & Financial Ast.	300	425	2,300	0	0	0
Utility Sector	300	300	400	0	0	0
Total Energy Conservation	14,718	15,353	21,381	657	635	855

	Lawrence Berkeley Lab			Energy Tech. Engineering Ctr.		
	FY 1994	FY 1995	FY 1996	FY 1994	FY 1995	FY 1996
	Actual	Planned	Planned	Actual	Planned	Planned
Sector Summary:						
Industrial Sector	967	799	500	0	0	0
Buildings Sector	14,980	15,650	13,999	350	400	400
Transportation Sector	5,650	2,525	3,000	0	0	0
Technical & Financial Ast.	0	100	100	0	0	0
Utility Sector	1,100	1,100	1,200	0	0	0
Total Energy Conservation	$22,697	$20,174	$18,799	$350	$400	$400

Uncosted Balances

Question: A reduction of $13,349,000 is included in the budget request which assumes the use of uncosted balances. Which projects will contribute to this reduction, how much is associated with each project and why are the excess funds available?

Answer: The $13,349,000 is not a reduction to the FY 1996 Congressional Budget Request. It is a financing offset predicated on the availability of prior-year funding to be made available as a result of a review of uncosted obligations. It is not currently known which projects will contribute to this financing. The General Accounting Office (GAO) is completing a comprehensive review of all uncosted obligations for the Energy Efficiency Programs and most of the other DOE programs at Headquarters and throughout the DOE field components. The GAO recommendations will be reviewed to determine funding availability based on the most current invoices for work performed, programmatic impacts, close-out or termination costs, and related information. If it is determined that funds are indeed excess to requirements and there is no adverse programmatic or cost impact, the funds would be deobligated from the various contracts and placed in reserve to offset the FY 1996 Congressional Budget Request.

Initiatives

Question: For each of your initiatives which are funded in more that one key activity, such as motor challenge, clean cities, etc. please provide a list of projects which comprise the initiative, along with the funding estimates for FY 1995 and FY 1996. Please put the projects associated with each initiative in priority order and note the budget activity and subactivity of each project.

Answer: The following information reflects funding for major initiatives which are funded in more than one key activity. The EPAct Climate Change Action Program is the highest priority followed by the Partnership for a New Generation of Vehicle, and Industries of the Future.

Department of Energy FY 1996 Congresssional Budget Request
Energy Efficiency - Major Crosscutting Initiatives
(dollars in thousands)

PROGRAM	FY 1995 Enacted	FY 1996 Request	EPACT Climate Change Action Plan (CCAP)		Partnership for a New Generation Vehicle		Industries of the Future	
			FY 1995	FY 1996	FY 1995	FY 1996	FY 1995	FY 1996
B. Interior and Related Agencies Appropriation								
1. Buildings Sector Program Level	115,636	154,802	27,692	58,549	0	0	0	0
2. Industry Sector Program Level	135,193	172,867	11,480	16,448	9,975	12,702	44,069	65,760
3. Transportation Sector Program Level	206,257	262,308	0	0	103,076	161,048	0	0
4. Utility Sector Program Level	8,756	9,930	1,756	2,984	0	0	0	0
5. Technical and Financial Assistance Program Level	319,727	325,981	0	0	0	2,000	0	0
6. Policy and Management - EC Program Level	8,342	11,332	0	0	0	0	0	0
7. ENERGY CONSERVATION Program Level	793,911	937,220	40,928	77,981	113,051	175,750	44,069	65,760

Department of Energy FY 1996 Congresssional Budget Request
Energy Efficiency - Major Crosscutting Initiatives
(dollars in thousands)

PROGRAM	FY 1995 Enacted	FY 1996 Request	EPACT Climate Change Action Plan (CCAP)		Partnership for a New Generation Vehicle		Industries of the Future	
			FY 1995	FY 1996	FY 1995	FY 1996	FY 1995	FY 1996
Interior and Related Agencies Committee								
I. Buildings Sector								
A. Building Systems	21,502	46,998	11,265	31,532	0	0	0	0
B. Building Envelope	9,617	11,999	0	1,492	0	0	0	0
C. Building Equipment	25,616	27,542	8,965	10,928	0	0	0	0
D. Codes and Standards	22,516	24,599	7,462	9,920	0	0	0	0
E. Federal Energy Management Program	23,472	25,408	0	0	0	0	0	0
F. Implementation and Deployment	1,370	6,032	0	4,677	0	0	0	0
G. Management and Planning	9,583	10,300	0	0	0	0	0	0
1. Evaluation, Planning, & Analysis	3,030	3,535	0	0	0	0	0	0
2. Program Direction	6,553	6,765	0	0	0	0	0	0
H. Capital Equipment	1,960	1,924	0	0	0	0	0	0
Total Building Sector Program Level	115,636	154,802	27,692	58,549	0	0	0	0
Estimate for Review of Uncosted	0	(2,256)	0	0	0	0	0	0
Total FY 1996 Budget Request	115,636	152,546	27,692	58,549	0	0	0	0
II. Industry Sector								
A. Cogeneration	27,809	34,488	0	0	0	0	0	0
B. Electric Drives	5,500	8,882	4,500	7,948	0	0	0	0
C. Process Heating and Cooling	7,814	4,588	0	0	0	0	3,750	3,584
D. Industrial Wastes	26,209	29,660	3,000	5,500	5,808	7,660	10,722	9,285
E. Municipal Solid Waste	2,737	2,680	0	0	0	0	0	0
F. Materials and Metals processing	22,517	25,070	0	0	4,167	5,042	9,970	9,696
G. Other Process Efficiency	19,907	27,757	0	0	0	0	19,627	27,475
D. Implementation and Deployment	12,995	29,722	3,980	3,000	0	0	0	15,720
E. Management and Planning	7,130	8,000	0	0	0	0	0	0
1. Evaluation, Planning, & Analysis	842	1,400	0	0	0	0	0	0
2. Program Direction	6,288	6,600	0	0	0	0	0	0
F. Capital Equipment	2,575	2,020	0	0	0	0	0	0

Department of Energy FY 1996 Congresssional Budget Request
Energy Efficiency - Major Crosscutting Initiatives
(dollars in thousands)

PROGRAM	FY 1995 Enacted	FY 1996 Request	EPACT Climate Change Action Plan (CCAP)		Partnership for a New Generation Vehicle		Industries of the Future	
			FY 1995	FY 1996	FY 1995	FY 1996	FY 1995	FY 1996
Total Industry Sector Program Level	135,193	172,867	11,480	16,448	9,975	12,702	44,069	65,760
Estimate for Review of Uncosted	0	(2,518)	0	0	0	0	0	0
Total FY 1996 Budget Request	135,193	170,349	11,480	16,448	9,975	12,702	44,069	65,760
III. Transportation Sector								
A. Alternative Fuels Utilization	52,455	55,578	0	0	0	0	0	0
B. Materials Technology	33,729	39,147	0	0	29,138	34,484	0	0
C. Heat Engine Technologies	18,208	24,066	0	0	12,238	18,112	0	0
D. Electric and Hybrid Propulsion Development	89,855	129,395	0	0	61,700	107,453	0	0
E. Implementation and Deployment	2,196	3,375	0	0	0	0	0	0
F. Management and Planning	8,421	9,200	0	0	0	0	0	0
1. Evaluation and Planning	2,283	2,300	0	0	0	0	0	0
2. Program Direction	6,138	6,900	0	0	0	0	0	0
G. Capital Equipment	1,393	1,547	0	0	0	999	0	0
Total Transportation Sector Program Level	206,257	262,308	0	0	103,076	161,048	0	0
Estimate for Review of Uncosted	0	(3,825)	0	0	0	0	0	0
Total FY 1996 Budget Request	206,257	258,483	0	0	103,076	161,048	0	0
IV. Utility Sector								
A. Integrated Resource Planning	8,756	9,930	1,756	2,984	0	0	0	0
B. District Heating and Cooling	0	0	0	0	0	0	0	0
Total Utility Sector Program Level	8,756	9,930	1,756	2,984	0	0	0	0
Estimate for Review of Uncosted	0	(144)	0	0	0	0	0	0
Total FY 1996 Budget Request	8,756	9,786	1,756	2,984	0	0	0	0
V. Technical and Financial Assistance								
A. International Market Development	2,907	5,134	0	0	0	0	0	0
B. Joint Ventures	0	0	0	0	0	0	0	0
C. Inventions and Innovations Program	5,799	8,762	0	0	0	2,000	0	0
D. Municipal Energy Management	1,848	1,843	0	0	0	0	0	0

Department of Energy FY 1996 Congresssional Budget Request
Energy Efficiency - Major Crosscutting Initiatives
(dollars in thousands)

PROGRAM	FY 1995 Enacted	FY 1996 Request	EPACT Climate Change Action Plan (CCAP)		Partnership for a New Generation Vehicle		Industries of the Future	
			FY 1995	FY 1996	FY 1995	FY 1996	FY 1995	FY 1996
E. Information and Communications	1,915	1,640	0	0	0	0	0	0
Operating Expense	1,915	1,640	0	0	0	0	0	0
Capital Equipment	0	0	0	0	0	0	0	0
F. Management	27,890	28,056	0	0	0	0	0	0
SUBTOTAL TFA R&D Program Level	40,359	45,435	0	0	0	2,000	0	0
Estimate for Review of Uncosted	0	(662)	0	0	0	0	0	0
Total FY 1996 Budget Request	40,359	44,773	0	0	0	2,000	0	0
G. Weatherization Assistance Program	226,371	229,046	0	0	0	0	0	0
H. State Energy Conservation Program	23,993	24,651	0	0	0	0	0	0
I. Institutional Conservation Program	29,004	26,849	0	0	0	0	0	0
SUBTOTAL GRANTS Program Level	279,368	280,546	0	0	0	0	0	0
Estimate for Review of Uncosted	0	(4,088)	0	0	0	0	0	0
Total FY 1996 Budget Request	279,368	276,458	0	0	0	0	0	0
Total Technical and Financial Assistance Program Level	319,727	325,981	0	0	0	2,000	0	0
Estimate for Review of Uncosted	0	(4,750)	0	0	0	0	0	0
Total FY 1996 Budget Request	319,727	321,231	0	0	0	2,000	0	0
VI. Policy and Management - EC	8,342	11,332	0	0	0	0	0	0
Total Policy & Management Program Level	8,342	11,332	0	0	0	0	0	0
Estimate for Review of Uncosted	0	(166)	0	0	0	0	0	0
Total Budget Authority Request	8,342	11,166	0	0	0	0	0	0
Energy Conservation R&D	514,543	656,674	40,928	77,981	113,051	175,750	44,069	65,760
Energy Conservation Grants	279,368	280,546	0	0	0	0	0	0
Total Energy Conservation Program Level	793,911	937,220	40,928	77,981	113,051	175,750	44,069	65,760

QUESTIONS SUBMITTED BY CHAIRMAN RALPH REGULA

GENERAL

Question: Despite the Secretary's testimony that DOE was prepared to strategically realign DOE programs to do more with less overall the DOE budget is up and the energy efficiency portion is up nearly $120 million or 15.5 percent. How can you justify such a large increase in these tight fiscal times?

Answer: The 15% increase requested for energy efficiency programs is the result of a tough, Department-wide priority setting effort in which high-return programs were increased while lower-return programs were decreased. The strategic realignment of which the Secretary speaks is being formulated now and will begin to take effect in FY 1996. However, the major fiscal savings from this effort will not be realized until formulation of the FY 1997 budget request.

GENERAL

Question: Briefly why do you think a government investment of this magnitude in energy efficiency technologies is warranted?

Answer: DOE's energy efficiency and renewable energy programs offer one of the highest returns on the taxpayer dollar of any in government. Between 1980 and 1995, DOE has spent approximately $13 billion in energy efficiency and renewable energy - an investment that has provided a much larger return to the U.S. economy in terms of higher corporate profits, lower consumer energy bills, more competitive industry and high-wage jobs. Many of the critics of DOE today apparently don't realize they're enjoying the benefits of DOE's past programs.

If you purchase a new double-pane window, drive a new Cummins engine or a Ford Ecostar, use a food or beverage can, turn on almost any major household appliance, or use a modern industrial ceramic part, you are using a technology the Department of Energy has helped invent, standardize or expand in applications or market share. These programs haven't ruined the U.S. economy. They've made it better.

DOE programs have produced some of the highest return on the dollar of any Federal endeavors.

- **Lighting:** U.S. consumers pay almost $40 billion each year for lighting. In the 1980s, DOE invested $3 million to help develop new high-efficiency electronic ballasts, which led to high-efficiency lighting systems. This seeded a new industry that now has sales of $200 million a year and has saved consumers at least $700 million to date on energy bills.

- **Low-E Windows:** We lose a staggering $25 billion each year in energy losses through windows, the cash equivalent of all the oil that flows through the Alaska Pipeline. In the 1980s years ago, DOE invested $3 million to develop new, low-emissivity windows that reduce energy loses by 35%. Today, these windows have captured 35% of the market, with sales of $600 million each year, and U.S. consumers have saved $760 million on the energy bills.

- **Waste Water Reduction in Ohio:** PPG, Inc. in Ohio reduced the volume of hazardous waste water in a paint manufacturing facility from 400,000 gallons to 20,000 gallons through advanced filtration and reverse osmosis technology. With an initial Federal investment of $250,000, PPG is saving $220,000/year in production costs. As part of the commercialization agreement with DOE, PPG is working with the rest of the industry to transfer the use of this technology. The resulting savings will save $10 millions in production costs for chemical companies.

- **Advanced Diesel Engine.** An improved diesel engine for heavy trucks was developed in partnership with the private sector. In 1992, this engine was commercialized by Cummins Engine Co. By 1993, 578,000 units were operating - resulting in a cumulative U.S. oil savings of 16.5 million barrels.

These are only four examples of past successes. Many more in the residential, commercial, industrial, transportation and utility sectors can be provided upon request.

Our best days are ahead. DOE has many new technologies on the verge of commercialization, ready to produce equally impressive benefits. One example is the new Sulfur Lamp jointly developed by a small company in Virginia was with DOE R&D. It produces more light, with less energy, at higher quality, with less environmental problems than conventional bulbs. Scientists say the S-Lamp will revolutionize lighting in America, making streets and parking lots safer, factories more productive and, a few years down the road, homes and offices cheaper to light.

GENERAL

Question: As a follow-up, investments in energy efficiency have always struck me as good business decisions. Your budget justification says "energy efficiency programs for industry are estimated to save U.S. firms $5.8 billion annually be the year 2000 and create 57,000 jobs." What extra advantage do DOE programs bring to the mix that businesses and individuals would not be making on their own?

Answer: Installation of energy efficiency technologies today can cut annual energy costs in businesses and homes dramatically - often with paybacks of 3 years or less. Yet many of these businesses and homes have not installed this equipment or realized these savings. Barriers to the rapid deployment of these technologies - technologies that save money today - prevent markets from responding efficiently. The Federal government has a critically important role in reducing the market barriers to the development and commercialization of these technologies.

The Federal government plays an essential role in supporting energy efficiency R&D and deployment. Because of a variety of market barriers, the private sector underinvests in technology development. These barriers include:

- competitive pressures to cut costs and increase near-term profits;
- high up-front costs of R&D, long lead times and risk of failure;
- difficulty in obtaining a competitive advantage from R&D investments when they can be quickly copied by competitors; and
- key industries, such as buildings, are extremely fragmented and lack the technical and financial resources to undertake substantial R&D on their own.

Working with the private sector, DOE has demonstrated that it can help to overcome these barriers, help to develop and commercialize advanced technologies and help ensure U.S. leadership in energy efficiency technology. Examples of successes abound. For example, a $3 million DOE investment in electronic ballasts for fluorescent lighting has resulted in sales of over $200 million per year and over $700 million in cumulative energy bill savings for U.S. consumers.

In addition to co-funding R&D, the Department works with State and local governments and the private sector to reduce the many market barriers that inhibit businesses and households from taking full advantage of the many economic opportunities in energy efficiency. These barriers include:

- lack of credible information on cost and performance of technologies;
- lack of access to up-front capital to make efficiency investments in households;
- in some cases, such as apartment buildings and rental properties, the owner has no incentive to make efficiency improvements because energy costs are passed through to others;
- lack of familiarity with energy efficiency technologies by the financial community; and
- energy prices that do not reflect the full social and environmental costs associated with the use of that energy.

The Federal government has a unique role to play in overcoming these barriers through mechanisms such as information programs, technology transfer activities, demonstrations, leadership through Federal facilities and supporting state, local and utility company efforts to promote these technologies. Quite simply, without the efforts of the DOE Office of Energy Efficiency and Renewable Energy, many of the huge economic benefits resulting from energy efficiency technology development, commercialization and use either would not occur at all or would be delayed for many years.

Question: Last year your budget proposed a shift in emphasis from research to deployment and commercialization of technologies. Some but not all of that shift was agreed to. For the record could you please provide a breakdown in each of the major categories i.e. buildings, transportation, industrial and utilities of what you consider the R&D portion of your budget versus the commercialization/deployment portions.

Answer: It is not accurate to say there has been a sizeable shift in our dollar funding from R&D to deployment. The shift has been very small, involving only 3 percent of our budget. Our largest deployment activity is and always has been weatherization. The following is a breakdown in each of the major categories, i.e., buildings, transportation, industrial, and utilities of R&D portion versus deployment.

FY 1995/1995 DOE EERE R&D VS DEPLOYMENT

Key Activity	R&D vs. Deployment						Cost Sharing							
	FY 1995 Enacted			FY 1996 Request			FY 1995				FY 1996			
							R&D		Deployment		R&D		Deployment	
	R&D	Deploy.	Total	R&D	Deploy.	Total	DOE	Other	DOE	Other	DOE	Other	DOE	Other
BUILDINGS SECTOR														
Building Systems	13,028	8,474	21,502	18,210	28,788	46,998	9,452	19,909	8,474	30,700	11,868	34,580	28,788	144,850
Building Envelope	9,417	200	9,617	10,307	1,692	11,999	8,722	8,449	80	380	8,884	10,183	1,592	1,900
Building Equipment	16,651	8,965	25,616	16,614	10,928	27,542	8,244	6,393	8,965	52,570	8,338	14,928	10,928	112,750
Implementation & Deployment	0	1,370	1,370	0	6,032	6,032	0	0	748	825	0	0	2,922	8,500
Management & Planning	4,647	4,936	9,583	3,967	6,333	10,300	0	0	0	0	0	0	0	0
Capital Equipment	1,686	274	1,960	1,650	274	1,924	0	0	0	0	0	0	0	0
TOTAL BUILDINGS SECTOR	45,429	24,219	69,648	50,748	54,047	104,795	26,418	34,751	18,267	84,475	29,090	59,691	44,230	268,000
INDUSTRY SECTOR														
Electric Drives	300	5,200	5,500	500	8,382	8,882	300	750	5,200	12,270	500	1,000	8,382	16,700
Waste Reduction (NICE^3 is deployment)	10,360	6,000	16 360	9,376	8,500	17,876	10,360	12,698	6,000	20,158	9,376	9,355	8,500	35,583
Implementation & Deployment (Envir. Tech. Partnerships is not deployment)	0	12,995	12,995	15,720	14,002	29,722	0	0	12,995	3,000	15,720	3,144	14,002	3,100
All Other OIT programs are R&D	100,338	0	100,338	116,387	0	116,387	100,338	48,896	0	0	116,387	41,337	0	0
TOTAL INDUSTRY SECTOR	110,998	24,195	135,193	141,983	30,884	172,867	110,998	62,344	24,195	35,428	141,983	54,836	30,884	55,383
TRANSPORTATION SECTOR														
Alternative Fuels Utilization	22,929	29,526	52,455	20,248	35,330	55,578	22,929	6,900	29,526	42,730	20,248	6,300	35,330	73,450
Materials Technology	33,729	0	33,729	39,147	0	39,147	33,729	9,600	0	0	39,147	16,100	0	0
Heat Engine Technologies	18,208	0	18,208	24,066	0	24,066	18,208	4,400	0	0	24,066	7,400	0	0
Electric and Hybrid Propulsion Development	89,855	0	89,855	129,395	0	129,395	89,855	67,300	0	0	129,395	79,600	0	0
Implementation and Deployment	500	1,696	2,196	1,675	1,700	3,375	500	0	1,696	2,000	1,675	1,763	1,700	2,000
Management	7,401	1,020	8,421	7,885	1,315	9,200	7,401	0	1,020	0	7,885	0	1,315	0
Capital Equipment	1,393	0	1,393	1,547	0	1,547	1,393	0	0	0	1,547	0	0	0
TOTAL TRANSPORTION SECTOR	174,015	32,242	206,257	223,963	38,345	262,308	174,015	88,200	32,242	44,730	223,963	111,163	38,345	75,450

FY 1995/1995 DOE EERE R&D VS DEPLOYMENT

Key Activity	R&D vs. Deployment						Cost Sharing							
	FY 1995 Enacted			FY 1996 Request			FY 1995				FY 1996			
							R&D		Deployment		R&D		Deployment	
	R&D	Deploy.	Total	R&D	Deploy.	Total	DOE	Other	DOE	Other	DOE	Other	DOE	Other
UTILITY SECTOR														
Demand-Side Management	0	1,620	1,620	0	1,615	1,615	0	0	1,620	80	0	0	1,615	80
All Other OUT programs are R&D	7,136	0	7,136	8,315	0	8,315	0	0	0	0	0	0	0	0
TOTAL UTILITY SECTOR	7,136	1,620	8,756	8,315	1,615	9,930	0	0	1,620	80	0	0	1,615	80
TECHNICAL AND FINANCIAL ASSISTANCE PROGRAM														
Inventors Assistance (Inventions & Innovation)	429	2,171	2,600	400	3,600	4,000								
International Market Development	6	2,651	2,657	8	4,658	4,666								
All Other TFA programs are R&D (excluding Grants)	35,102	0	35,102	36,769	0	36,769								
TOTAL TFA	35,537	4,822	40,359	37,177	8,258	45,435								
Total*	373,115	87,098	460,213	462,186	133,149	595,335	311,431	185,295	76,324	164,713	395,036	225,690	115,074	398,913
Percent of Total	81%	19%		78%	22%									

*Excluding FEMP, Codes and Standards, and State grants.

Question: Once again your budget proposes some element of market introduction. How does your budget for FY 1996 compare to the FY 1995 enacted in terms of emphasis on commercialization and deployment versus research?

Answer: The portion of EE's budget that is identified as deployment has remained relatively the same for both FY 1995 and FY 1996. In FY 1995, deployment represents approximately 26 percent of EE's appropriation, while in FY 1996, 28 percent of the budget request.

GENERAL

Question: Given that reductions are inevitable, would you recommend greater cuts on the R&D side or the deployment commercialization side of your budget?

Answer: Priority setting is a much more complicated question that choosing between R&D and technology deployment. In the planning and execution of our programs, we strive for the appropriate balance between the two that is most appropriate for each individual technology. Consequently, this question cannot be answered for EE programs as a whole. In the process of setting priorities, we will continue to strive to maintain balance between the two for all programs.

Question: For the record what level of cost sharing on average are you achieving in these areas of commercialization/deployment? How does this compare to the R&D portion of your budget?

Answer: The following is the level of cost sharing on average that EE is achieving in these areas of deployment. Also provided is a comparison to the R&D portion of our budget.

FY 1995/1995 DOE EERE R&D VS DEPLOYMENT

Key Activity	R&D vs. Deployment						Cost Sharing							
	FY 1995 Enacted			FY 1996 Request			FY 1995				FY 1996			
							R&D		Deployment		R&D		Deployment	
	R&D	Deploy.	Total	R&D	Deploy.	Total	DOE	Other	DOE	Other	DOE	Other	DOE	Other
BUILDINGS SECTOR														
Building Systems	13,028	8,474	21,502	18,210	28,788	46,998	9,452	19,909	8,474	30,700	11,868	34,580	28,788	144,850
Building Envelope	9,417	200	9,617	10,307	1,692	11,999	8,722	8,449	80	380	8,884	10,183	1,592	1,900
Building Equipment	16,651	8,965	25,616	16,614	10,928	27,542	8,244	6,393	8,965	52,570	8,338	14,928	10,928	112,750
Implementation & Deployment	0	1,370	1,370	0	6,032	6,032	0	0	748	825	0	0	2,922	8,500
Management & Planning	4,647	4,936	9,583	3,967	6,333	10,300	0	0	0	0	0	0	0	0
Capital Equipment	1,686	274	1,960	1,650	274	1,924	0	0	0	0	0	0	0	0
TOTAL BUILDINGS SECTOR	45,429	24,219	69,648	50,748	54,047	104,795	26,418	34,751	18,267	84,475	29,090	59,691	44,230	268,000
INDUSTRY SECTOR														
Electric Drives	300	5,200	5,500	500	8,382	8,882	300	750	5,200	12,270	500	1,000	8,382	16,700
Waste Reduction (NICE^3 is deployment)	10,360	6,000	16,360	9,376	8,500	17,876	10,360	12,698	6,000	20,158	9,376	9,355	8,500	35,583
Implementation & Deployment (Envir. Tech. Partnerships is not deployment)	0	12,995	12,995	15,720	14,002	29,722	0	0	12,995	3,000	15,720	3,144	14,002	3,100
All Other OIT programs are R&D	100,338	0	100,338	116,387	0	116,387	100,338	48,896	0	0	116,387	41,337	0	0
TOTAL INDUSTRY SECTOR	110,998	24,195	135,193	141,983	30,884	172,867	110,998	62,344	24,195	35,428	141,983	54,836	30,884	55,383
TRANSPORTATION SECTOR														
Alternative Fuels Utilization	22,929	29,526	52,455	20,248	35,330	55,578	22,929	6,900	29,526	42,730	20,248	6,300	35,330	73,450
Materials Technology	33,729	0	33,729	39,147	0	39,147	33,729	9,600	0	0	39,147	16,100	0	0
Heat Engine Technologies	18,208	0	18,208	24,066	0	24,066	18,208	4,400	0	0	24,066	7,400	0	0
Electric and Hybrid Propulsion Development	89,855	0	89,855	129,395	0	129,395	89,855	67,300	0	0	129,395	79,600	0	0
Implementation and Deployment	500	1,696	2,196	1,675	1,700	3,375	500	0	1,696	2,000	1,675	1,763	1,700	2,000
Management	7,401	1,020	8,421	7,885	1,315	9,200	7,401	0	1,020	0	7,885	0	1,315	0
Capital Equipment	1,393	0	1,393	1,547	0	1,547	1,393	0	0	0	1,547	0	0	0
TOTAL TRANSPORTION SECTOR	174,015	32,242	206,257	223,963	38,345	262,308	174,015	88,200	32,242	44,730	223,963	111,163	38,345	75,450

FY 1995/1995 DOE EERE R&D VS DEPLOYMENT

Key Activity	R&D vs. Deployment						Cost Sharing							
	FY 1995 Enacted			FY 1996 Request			FY 1995				FY 1996			
							R&D		Deployment		R&D		Deployment	
	R&D	Deploy.	Total	R&D	Deploy.	Total	DOE	Other	DOE	Other	DOE	Other	DOE	Other
UTILITY SECTOR														
Demand-Side Management	0	1,620	1,620	0	1,615	1,615	0	0	1,620	80	0	0	1,615	80
All Other OUT programs are R&D	7,136	0	7,136	8,315	0	8,315	0	0	0	0	0	0	0	0
TOTAL UTILITY SECTOR	7,136	1,620	8,756	8,315	1,615	9,930	0	0	1,620	80	0	0	1,615	80
TECHNICAL AND FINANCIAL ASSISTANCE PROGRAM														
Inventors Assistance (Inventions & Innovation)	429	2,171	2,600	400	3,600	4,000								
International Market Development	6	2,651	2,657	8	4,658	4,666								
All Other TFA programs are R&D (excluding Grants)	35,102	0	35,102	36,769	0	36,769								
TOTAL TFA	35,537	4,822	40,359	37,177	8,258	45,435								
Total*	373,115	87,098	460,213	462,186	133,149	595,335	311,431	185,295	76,324	164,713	395,036	225,690	115,074	398,913
Percent of Total	81%	19%		78%	22%									

*Excluding FEMP, Codes and Standards, and State grants.

GENERAL

Question: What has been the return on investment for the Department of Energy efficiency programs?

Answer: There are two ways of measuring the return of these programs - in the aggregate and on a program-specific level. On an aggregate level, DOE has cumulatively spent $5.7 billion on energy efficiency programs through 1994 (Congressional Research Service). During that same period, the U.S. economy as a whole has saved an estimated $3,800 billion through efficiency investments (adapted from CRS data). Assuming conservatively that only 10% of these savings are due directly and indirectly to DOE efficiency programs, the benefit/cost ratio is 67:1. On a more micro level, any program for which we have measured field results has indicated a benefit/cost ratio of well over 1.

The following four examples are typical.

DOE programs have produced some of the highest return on the dollar of any Federal endeavors.

- **Lighting:** U.S. consumers pay almost $40 billion each year for lighting. In the 1980s, DOE invested $3 million to help develop new high-efficiency electronic ballasts, which led to high-efficiency lighting systems. This seeded a new industry that now has sales of $200 million a year and is saving consumers at least $400 million on energy bills.

- **Low-E Windows:** We lose a staggering $25 billion each year in energy losses through windows, the cash equivalent of all the oil that flows through the Alaska Pipeline. In the 1980s years ago, DOE invested $3 million to develop new, low-emissivity windows that reduce energy loses by 35%. Today, these windows have captured 35% of the market, with sales of $600 million each year, and U.S. consumers have saved $760 million on the energy bills.

- **Waste Water Reduction in Ohio:** PPG, Inc. in Ohio reduced the volume of hazardous waste water in a paint manufacturing facility from 400,000 gallons to 20,000 gallons through advanced filtration and reverse osmosis technology. With an initial Federal investment of $250,000, PPG is saving $220,000/year in production costs. As part of the commercialization agreement with DOE, PPG is working with the rest of the industry to transfer the use of this technology. The resulting savings will save $10 millions in production costs for chemical companies.

- **Advanced Diesel Engine.** An improved diesel engine for heavy trucks was developed in partnership with the private sector. In 1992, this engine was commercialized by Cummins Engine Co. By 1993, 578,000 units were operating - resulting in a cumulative U.S. oil savings of 16.5 million barrels.

Question: How many if any programs have you eliminated or reduced this year?

Answer: A total of 137 projects in Energy Efficiency programs are planned to be completed or reduced in FY 1995. This includes 47 in Buildings Technologies, 52 in Industry Technologies, 24 in Transportation Technologies, 4 in Utility Technologies, and 10 in Technical and Financial Assistance Programs.

QUESTIONS SUBMITTED BY CONGRESSMAN RALPH REGULA

Practical Applications of Energy Conservation Technology

Question: Your testimony covered an impressive variety of topics from electric drive vehicles to building programs. It did not seem, however, that your testimony focused on how much of this technology will find its way into practical applications. For example, how would we maintain electric cars and what infrastructure would there be in place to support them?

Answer: The Electric Power Research Institute (EPRI) established an Infrastructure Working Council (IWC) that consists of the electric utility industry, automobile manufacturers, component suppliers, standards setting organizations, and government agencies to identify and resolve infrastructure problems. The IWC has examined such infrastructure issues as building code restrictions, the affect of battery charging on power quality, connector standardization, and safety considerations. The work performed by the IWC, along with the information gained from field testing of electric vehicles through activities such as the DOE Site Operator Program, have identified and resolved many infrastructure problems. However, more work is necessary before full-scale commercialization can be initiated. The electric utilities and automobile manufacturers are seeking government support to initiate a program called EV America/Market Launch Framework. The purpose of this program is to concentrate a sufficient number of vehicles, approximately 1,000, in a few key areas to determine what the infrastructure requirements are for supporting a large number of vehicles. Information would be collected on the need for public charging facilities, maintenance and service requirements, driver acceptance, etc., in addition to vehicle reliability and durability data. This information can then be used by State and local governments; stakeholder industries, such as the electric utilities and automobile manufacturers; and Federal agencies to determine what actions must be taken to successfully commercialize electric vehicles on a large scale.

Question: You also expressed concerns which I share over the rate of imported oil and your commitment to contribute to a reduction through your energy efficiency programs. Natural gas is clearly an available fuel with infrastructure that allows delivery in a wide range of market applications and yet your budget does not seem to make this a priority fuel option. Could you for the record prioritize your focus on fuels? Do you see the next 20 years depending on the use of natural gas with alternative fuels phasing in in the out years? If that is so, can you group your programs by fuels so we can better understand when we can expect the products of these programs to arrive in the marketplace and begin to make a difference?

Answer: The Clinton Administration has properly identified natural gas as a fuel of choice because of its domestic abundance and clean burning qualities. The Office of Energy Efficiency and Renewable Energy (EERE) has a robust natural gas end-use utilization initiative. The natural gas initiative's appropriation request for FY96 totals $107 million, a $28.5 million increase over FY95, and an increase of $39.6 million over FY94. The initiative consists of 25 programs, spanning EERE's Offices of Industrial, Transportation, and Building Technologies. As EIA data demonstrates, natural gas utilization is steadily increasing and will continue to do so far into the future. EERE's partnerships with the natural gas industry ensure that new, highly efficient technologies are constantly improving and being deployed.

In the Building sector, EERE is engaged in the development of gas heating and cooling technologies for both the residential and commercial sectors. In the Industrial sector, EERE is moving out on a joint solicitation with Fossil Energy in the area of Advanced Turbines. In the Transportation sector, natural gas vehicles and the necessary infrastructure are being advanced and deployed across the nation through our highly leveraged and successful Clean Cities Program.

Question: You spoke of natural gas as one of the alternative fuels. I tend to consider natural gas a mainstream fuel. Could you explain in more detail what you mean by alternative fuels and exactly where you see natural gas fitting in to the nations energy demand profile?

Answer: Natural gas is classified as an alternative fuel for transportation applications, for which oil is the conventional energy source. We agree that natural gas is a mainstream fuel for many other applications, such as heating in buildings and electricity generation. However, natural gas is also promising in the near-term as an alternative to oil, a large percentage of which is imported. Capturing this potential is the focus of many of our transportation programs, such as Clean Cities and other alternative fuel deployment programs.

The Climate Change Action Plan

Question: Last year we talked at some length about the climate change action plan. While not all of your FY 1995 budget request was approved a substantial investment in these initiatives was agreed to. How much of your FY 1996 budget proposal is CCAP initiatives? Are any of these new initiatives or are they continuations of last year's programs?

Answer: The actions of the climate change action plan - or Energy Partnerships for a Strong Economy - have an Energy Conservation budget request of $78.0 million in FY 1996. The largest fraction of this request is the continuation of the initiatives funded last year. The increase is mostly explained ($23 million) by a higher funding request for those key initiatives started last year which have shown the greatest promise to meet the U.S. international environmental commitments while providing the highest return to the voluntary program participants and the economy in general. The remaining increase ($14 million) are for a series of new buildings initiatives - particularly the $5 million DOE/HUD initiative to provide assistance to HUD operators and contractors to install energy efficiency equipment in public housing facilities - thereby cutting operating costs and returning money to the Treasury.

The Climate Change Action Plan

Question: Are you requesting funding for any programs you requested last year which were not funded by Congress?

Answer: In only one case are we doing this. We have requested $2.5 million for a nationwide efficiency equipment operators training program. Much of the savings expected from efficiency equipment are not realized because building operators are not sufficiently trained in their use. Through this program we will develop materials and design coursework to "train the trainers". This will involve heavy participation from the States and unions. all private and States parties maintain that there is an invaluable federal role here because of the need for standardized, high-quality training and the large potential payoffs.

Question: Last year the U.S. appeared to be initiating its part of the global agreement with little input from other developing nations. You indicated last year that other action plans were to be in place by September 1994. For the record could you comment on what specific actions other countries are now taking to implement this international agreement?

Answer: A large majority of OECD nations have developed national action plans (22 of 26). The nature of the approaches varies enormously - from voluntary programs in partnership with industry (such as the U.S.) to more command and control approaches. However, each of these nations has made an international commitment to limit or reduce greenhouse gas emissions and put forward a detailed plan on how it will do so. The U.S. is certainly not acting unilaterally on climate.

Examples of the kind of action other countries are taking in response to the Framework Convention on Climate Change (FCCC) follow.

The United Kingdom's program to limit carbon dioxide emissions is based on a partnership approach, however, in addition to voluntary measures, the UK plan contains a provision for an eight percent value added tax on home energy consumption.

Nearly half of the UK's emission reduction goal is met through home energy consumption provisions. The UK government plays a leading role in developing" eco-lable, products need to meet stringent environmental criteria based on a life cycle analysis of the environmental impacts of that product group. Washing machines and dishwashers were the first appliances to receive product criteria in June 1993.

The United Kingdom published its report under the FCCC in January 1994. The report describes the UK's climate change program. The goal of the UK program at the time the report was published was to save about 10 million tonnes of carbon against projected emissions by 2000 through programs spread across all sectors of the economy. However, currently the UK projects that its actions will result in even greater emissions reductions than that projected in 1994.

In addition to other programs, Canada is implementing a program similar to the U.S. Climate Challenge program where electric utilities make commitments to voluntarily reduce their greenhouse gas emissions.

The FCCC Secretariat, in reviewing the first 15 action reports, noted that over 700 actions were described. while the list includes similar or overlapping actions, there is no doubt that the innovative approaches are more than had been anticipated. A listing of these actions is extracted from FIRST REVIEW OF INFORMATION COMMUNICATED TO EACH PARTY INCLUDED IN ANNEX I PARTIES.

Buildings

Question: I am interested by testimony we had before the subcommittee last week from the Integrated Building and Construction Solutions or IBACoS which is one of the consortia you have funded through the Building America program. As I understand it this was the only consortium DOE supported but is now proposing to support three other consortia. Why are four consortia needed?

Answer: Three additional teams have been chosen so as to provide a broad base of lead builders, material suppliers, equipment manufacturers and design professionals to translate advanced systems innovations developed by the teams to mainstream markets. They are conducting systems engineering studies on a broad range of problems including building process improvements and improvements in technical systems with the goal of producing substantial reductions in energy use, construction waste and construction time. The team's efforts complement each other and will be managed to ensure that duplication of effort does not occur.

Question: How much is DOE putting into this initiative and how much are the consortia partners contributing?

Answer: In the near term, the contribution is 1:1. Over the life of the program, the industry contribution will be 2-3 times larger than the DOE contribution. The industry teams are paying costs for construction of test and prototype homes that are being used to conduct system engineering studies.

Question: Are the concepts tested being integrated into large-scale developments?

Answer: The program includes neighborhood scale developments to ensure that major barriers to system innovations are fully evaluated. The teams participating in the program will build, at their expense, over 600 houses to fully evaluate the cost and performance benefits associated with systems innovations developed by the program.

Question: In the buildings sector where are the greatest opportunities for energy efficiency gains i.e. commercial or residential?

Answer: In 1992, the buildings sector accounted for over one-third of all primary energy consumption and consumed 61% of the electricity produced in the United States. Each year, Americans spend $190 billion dollars on their energy bills. These facts dictate the need for energy efficiency gains in both commercial and residential buildings. Unique opportunities exist in both building sectors. Efficiency gains in commercial buildings increase profits for private businesses and create jobs. Efficiency gains in residential homes increase a homeowner's disposable cash for purchasing more goods and services. To achieve these efficiency gains, the Department supports a balanced portfolio of research, development, and deployment to take full advantage of these opportunities.

Question: A witness for the National Association of Home Builders testified that much of the energy-saving potential in residential homes is "potential, not reality." How does your proposed budget help turn this potential into reality?

Answer: We agree with the statement of the NAHB witness; the home building industry, for many reasons, is slow to adopt new approaches and technologies. There is ample evidence that far more energy efficient buildings can be build cost-effectively with both existing and new technologies emanating from private and Federal research programs. Turning the potential for energy savings into reality requires research on new materials and techniques available to home builders to identify those that can really contribute to energy conservation. Programs are needed to bring them into the home building mainstream. A method to bring such innovations into the mainstream involves carrying out highly visible demonstrations, educating builders and eliminating obstacles such as a lack of available financing mechanisms and obsolete regulatory barriers.

To address the lack of available financing measures for improving energy efficiency, other parts of our budget request include funds to assist in the development and implementation of Home Energy Rating Systems (HERS) and Energy Efficiency Loans (EELS) by the private sector that can provide attractive rates to pay for energy efficiency improvements to existing buildings. Additional efficiency gains are provided for in other parts of the budget request by funding for design tools that can result in better energy performance due to better building design and orientation and training programs for builders and code officials.

Question: According to NAHB the important areas are research on new materials and techniques and bringing these technologies to the market. Do you agree with these priorities and how does your budget address these needs?

Answer: In general, we do agree and we are working in both these areas. Improving market penetration rates of new technologies and materials is a necessary part of achieving the goal of greater energy efficiency in new homes. The budget request provides for our continued partnership with the NAHB, through their research center, to accomplish these objectives.

Question: Could you comment on the success you have had with your HUD partnership and what specifically is proposed for FY 1996? Is this a new initiative?

Answer: The existing partnership with HUD was a modestly funded initiative designed to develop and pilot test techniques, technologies and financing methods that could enable major increases in energy efficiency and energy cost savings for public and assisted housing. DOE-HUD partnerships led to projects in cities throughout the nation including Philadelphia, Atlanta, Boston, Chicago, Kansas City and in San Francisco. Specific projects targeted the elderly, the homeless and Native Americans. These demonstrations have resulted in a portfolio of simplified methods and design tools, energy management training, including effective guidance for the use of private performance-based financing, that are now ready for a major deployment thrust beginning in FY 1996.

The FY 1996 program is an expanded initiative aimed at the large scale delivery of the tools and techniques within this portfolio. It responds directly to findings that have indicated a significant need for technical, financial and project management capabilities that do not now exist with local public housing authorities. It will satisfy that need through the provision of technical assistance from DOE to organizations and individuals who are directly responsible for the management of public and assisted housing. DOE technical assistance will be provided with two primary emphases: (1) focusing on improvements to public and assisted housing within a whole community or region, as well as on individual buildings; and (2) leveraging public capital funds with investments from private energy performance contractors, utilities and other sources. This approach will significantly help in guiding those managers toward more energy efficient housing by ensuring that energy improvements are installed concurrently as they collectively invest more than two billion dollars in capital outlays and other support that HUD provides annually for modernizing that housing.

Question: If HUD is reinvented or eliminated is this program still valid?

Answer: HUD's "reinvention" or potential elimination does not alleviate the high impact of utility costs in public and assisted housing in local communities. HUD's reinvention strategy creates an ideal opportunity for utility cost management to focus on privatization and direct more responsibility to the end user. Therefore, the program remains valid if HUD is reinvented or eliminated. Technical assistance from DOE that is proposed under the program is targeted primarily toward those organizations and individuals at local and community levels who are directly responsible for managing public and federally assisted housing -- not toward HUD's headquarters or field office staff. If HUD is reinvented, the major thrust of HUD's reinvention proposal is to make public and assisted housing more competitive with alternatives in the private market, and to increase capabilities and incentives for effective local management of such housing. The proposed DOE program will strongly support that reinvention thrust. If HUD is "eliminated", public and assisted low income housing that is currently subsidized by HUD (about 4 million units, nationwide) will still exist. The managers of such housing will still need the technical assistance that is proposed by the DOE program, and the financial leverage likely to result from it.

Question: You propose a new initiative for about $3 million for sustainable buildings. Could you describe this and why this is a priority?

Answer: The proposed sustainable buildings program is designed to accelerate research on, and widespread construction and renovation of, buildings that use renewable and energy efficiency measures along with environmentally-sensitive materials/products, design and construction practices. It is designed to encourage buildings that are more affordable to build, renovate and operate, and increase the productivity of their occupants. This program is designed to leverage existing local initiatives to develop the know-how and data required to prove to industry that advanced buildings perform as predicted. This program is responsive to industry's demand for performance data under multiple climate and operating conditions. Meaningful opportunities to cost-share needed research and development will be lost if the Department is unable to capitalize on existing local and regional momentum.

The sustainable buildings program will build upon local/regional economic development partnerships in differing climates to define the required research and development and approaches for expanding sustainable building practices. Local partners will identify the best mix of (1) energy efficiency, renewable energy and indoor air quality strategies, and (2) site waste stream management strategies to reduce construction wastes, recycle construction and renovation wastes, and on-site water run-off. By using these waste streams for productive purposes, it is possible to reduce the energy demand required to make building materials, and to reduce the cost of waste disposal. Local initiative may even include research on new materials, thereby, expanding the local economic base.

Specific activities will be based on local/regional requirements and the extent to which local initiatives all the Department to test and replicate the knowledge gained from its building research programs at a scale appropriate to facilitate adoption by industry. Activities are likely to include information, design assistance, building and material performance monitoring, and research on new materials/products made from construction/renovation site wastes. Funds for the construction and renovation of buildings resulting from local/regional partnerships will be provided by local building owners or developers.

Know-how from building research programs such as Building America, Exemplary Buildings, USH_2O, and Indoor Air Quality will be made available and tested for replicability in response to industry's need to have performance data reflective of real-world conditions. Information on recycled and recyclable wastes, construction value engineering, on-site waste management strategies and other waste minimization approaches will also be provided to help in developing cost-effective energy/waste management strategies, and to encourage research on new, non-toxic building materials.

The results will documented in case studies, including performance information on the monitored buildings. In addition, existing design guidelines may, in time, be expanded to include new products/materials and waste management approaches.

Question: Your budget proposes a $20 million initiative which is an $11 million increase over FY 1995 for Rebuild America. What is the difference between this and the Build America program.

Answer: Rebuild America is a five-year Department of Energy (DOE) voluntary program which supports the formation of community and regional partnerships to design and carry out *commercial and multifamily building renovations.* Organizations making up partnerships include government agencies, economic development organizations, private businesses, utilities, and others. DOE will help partners upgrade the energy efficiency of their buildings by providing information on technology cost and performance, energy retrofit and financing strategies, and limited on-site assistance. DOE is working with organizations including the U.S. Conference of Mayors, U.S. Chamber of Commerce, National Association of Counties, International City Management Association, and others to increase the outreach and effectiveness of program.

There are three different partnerships in Rebuild America. They are as follows:

1) Challenge Partnerships are designed to reach building owners through associations and interest groups such as the U.S. Conference of Mayors, the U.S. Chamber of Commerce, and others, and is intended as a initial step for the other two types of partnerships.

2) Independent Partnerships are those that receive only technical assistance from DOE. These partnerships must combine financial resources from participating organizations in order to plan and implement their community or regional programs.

3) Financial Partnerships receive financial support from DOE through Cooperative Agreements awarded in annual solicitations. A partnership must include at least one State or local government, and may include utilities, building owners, financial institutions, universities, nonprofit organizations and others. DOE financial assistance may be used by a partnership for administration, marketing, building audits, and training. No DOE financial assistance may be used for capital investments.

"Building America" focuses on support for consortia who can apply "system engineering concepts" to the design, construction and delivery of *new homes*. System engineered approaches will result in homes that are of higher quality and are less costly to heat and cool. In contrast, Rebuild America focuses on accelerating cost effective energy retrofits in *existing commercial buildings and multifamily housing*.

Question: What is the importance of this initiative and who are your partners? What is the cost share involved in this program?

Answer: The Rebuild America program is a voluntary approach to increasing the efficiency of the nations building stock. US commercial building owners and multifamily housing tenants spend over $90 billion for heating, cooling, and to provide other energy consuming services in their buildings. By promoting participation in Rebuild America, the Department can help these building owners/occupants increase profits for businesses, help local government reduce spending, reduce utility bills for housing occupants, and help communities and utilities avoid costs associated with new power plants. The building owners participating in Rebuild America will reduce annual operating costs by $650 million by the year 2000. In FY 1996, Rebuild America projects will leverage almost $140 million in private investment -- creating jobs, improving environmental quality, and increasing the comfort of building occupants.

The Department is forming alliances with major organizations to increase the outreach and effectiveness of the program. These organizations include: US Conference of Mayors, National Association of Counties, International City Management Association, Association of Higher Education Facilities Officers of Universities and Colleges, National Association of State Energy Officers, American Public Power Association, American Gas Association, Edison Electric Institute, Public Technology Inc., and the US Chamber of Commerce.

In FY 96, we expect $130 million dollars in cost sharing for Rebuild America Partners. This is a ratio of 10 to 1, based on funding used by the Department to directly support partners. Partners will be from both the private and public sector. For partners that only receive technical assistance, the entire cost of planning and implementing energy renovations will be the responsibility of the partners at the local level. Partners who receive financial awards from the solicitation will pay for some of the administrative costs of projects and all of the capital equipment improvement costs.

Question: For the record please provide details as to what will be done for $20 million and specifically what is the $11 million increased funding that was not undertaken in FY 1995?

Answer: Financial Partnerships - Approximately 60% of the requested funding will be used to provide "seed" money to 10-15 partnerships in FY 1996 to accelerate projects across the nation. Criteria for project selection include energy savings, floorspace covered, potential for replication, and quality of business plan.

Challenge and Independent Partnerships - Approximately 20% of the requested funding will be used to provide assistance to municipalities participating - 100 expected in FY 1995 - in Rebuild America through the Energy Smart Challenge. To support this customer base the Department will finish development of a handbook to provide information and examples of the best technical and financing approaches to retrofit projects. DOE will also provide telephone support to the participating cities. Cities that complete Challenge steps and apply for Independent Partnerships will be eligible for more extensive assistance from expert teams, who will provide on-site assistance on a limited basis. Activities of the scale planned in 1995 for both local & association partnerships are essential to ensure a base of sufficient size upon which to build future program partnerships.

Modeled after the US Conference of Mayors/DOE Energy-Smart Challenge, 2-3 other program efforts will be started with Chamber of Commerce, National Association of Counties, and APPA's Association of Higher Education Facility Officers. These efforts are needed to increase the number of Rebuild America partners and get more people at the local level involved. The increased participation will require additional funding to provide a consistent level of service to all partners.

Approximately 20% of the funding will be used for Administration, Evaluation, and Outreach. This supports the development of materials for the program, evaluation of the program, customer service staff, and development of publications, conference presentations, trade journal articles and documents profiling "best practices" of partnerships. Dissemination of Best Practice information is critical for the replication of projects.

Question: Who is potentially participating in this initiative and how will participants be selected?

Answer: There is no selection criterion to participate in the initial phase of the Rebuild America program. A voluntary pledge is signed which states the participant will perform the necessary first steps of a energy renovation project. Our initial audience for this pledge are the members of the U.S. Conference of Mayors. We are targeting the 1100 mayors which represent cities with a population over 30,000. We will also be extending this pledge to several other organizations that represent colleges and universities, city managers, and counties.

For communities and other organizations which complete these first steps and desire additional assistance from DOE in the form of funding and technical assistance, there is a annual competitive solicitation process. Organizations eligible apply include government agencies, economic development organizations, private businesses, utilities, and others. The applicants will be evaluated on several criteria. They are (1) the management structure of their program; (2) total number of targeted buildings and floorspace; (3) ability of applicant to complete the renovations; (4) ability of program to continue once DOE funding is exhausted; (5) ability to replicate the program in other communities; and others. This solicitation is open to any group which forms a partnership of varying entities with the unified mission of improving the energy efficiency of their community's buildings. Over 450 organizations/consortia have requested the FY 1995 solicitation.

Question: Your budget proposes a new $988,000 for a building design fee reform. What specifically is this initiative and why is this an important federal initiative? Why wouldn't architects and engineers incorporate energy efficiency into their design without government incentives.

Answer: Design fees vary with the type and size of building being designed. The customary fees were established at a time when buildings were simpler and issues like energy were not the concern. Even as energy usage and cost have become concerns, design fee structures have not changed. These fee structures often do not adequately cover the additional design time associated with performing building energy analysis. Thus, designers are discouraged from examining energy saving and renewable energy opportunities.

Thus, the focus of this initiative is to (1) determine the extent to which customary design fees inhibit the ability of architects and engineers from incorporating cost-effective energy efficiency and renewable energy strategies into buildings, and (2) develop and evaluate various incentive mechanisms to defray higher design costs. The funding would, therefore, be used to:

- Identify the influence of established fee structures on ability to design for energy efficiency and renewables and factors keeping investors from paying the fees.
- Develop model incentives programs. These may include various performance based fee systems including shared energy savings similar to those used by Energy Service Companies (ESCOs).
- Cooperatively implement joint pilot programs with utilities. This will be undertaken with utilities already having design fee incentive programs for their demand-side management (DSM) programs.
- Evaluate pilot programs.
- With industry develop refined model protocols, procedures, and/or agreements for use by design firms and developers/owners.

As shown in the above description, this initiative is not an incentives program, but one designed to clarify the issues associated with design fees that hinder the incorporation of energy efficiency and renewable energy strategies in buildings, and to overcome those problems.

Question: Your windows request is up by 50 percent. What justifies this, particularly since your budget indicates a new start in an area called "superwindow collaborative."

Answer: The benefits to the nation are very large in terms of energy savings for a modest investment in accelerating the introduction of "superwindows." This large energy savings potential can be captured if the today's window market can be shifted from its current average of less than R-2 toward the "best available" technology, of over R-5. The market moves slowly unless prodded by outside forces. Much of the shift from single to double to low-E was accelerated by the actions of a few high end manufacturers targeting cold climates and by the impact of tighter standards. The current standards can be met by products already on the market so there is little additional incentive to offer better products. The large manufacturers need to be encouraged to offer higher performance options (R-4, R-5) and smaller manufacturers need pressure and encouragement to upgrade to better off-the-shelf technology today.

Question: Why is this superwindow work not funded as part of the Building America consortia?

Answer: The superwindow collaborative is supportive of such initiatives or programs as "Building America", but is different. The superwindow collaborative builds on the base program's work to develop the technical basis for the National Fenestration Rating Council (NFRC) window rating and labeling program and the base program's work with industry in developing high performance glazing. The initiative will work through such organizations as NFRC and the window industry.

Question: Your budget proposes a new $988,000 lighting collaborative? What makes this different from the technology introduction partnerships program which is proposed at $10 million?

Answer: Many of the strategies to be used in the lighting collaboratives will be similar to those in the Partnerships for Technology Introduction. However, there are some key differences. Some of the new lighting technologies are less mature than those being supported under the Partnerships program. This situation requires use of some strategies that are more closely linked to the Department's lighting R&D program, such as more extensive test and evaluation efforts.

The lighting collaborative is also separate from the Partnerships program in order to provide maximum focus on lighting for several reasons. First, the Department's evaluation of the potential savings from replacing incandescent lighting is very large. Second, the Department's partners will be somewhat unique to incandescent lighting. Finally, high efficiency replacements for incandescent lighting face some unique market hurdles. For these reasons, we want to dedicate management teams and staff exclusively to lighting collaboratives rather than use teams already spread over the several consortia in the Partnerships program.

Question: Your budget proposes a new $2 million initiative for fuel cell building microcogeneration. What will be accomplished with this funding and why is this a priority?

Answer: In cost shared programs with industry, the buildings microcogeneration program will develop key technologies to adapt phosphoric acid (PAFC) and proton exchange membrane (PEM) fuel cells to buildings. Enabling technologies include: new materials and cell designs optimized for heat recovery and natural gas reformation, thermal integration with building heating and air conditioning systems and electric integration with building electrical systems. The buildings fuel cell program would also assist private industry in meeting fuel cell building application needs such as: developing building application computer tools, developing universal building installation guidelines, analyzing the economic and environmental benefits of fuel cells in buildings.

This program is a priority because building cogeneration is the most attractive near-term, large scale market for fuel cells. The attractiveness of the buildings market is based on the added economic value of using of waste heat, the economic impact of foregoing utility investments in distribution system upgrades, and the avoidance of some of the more difficult requirements of transport applications, particularly very low cost. This program will also focus exclusively on those fuel cell technology issues which are unique to buildings and which are not included in the Department's other fuel cell programs which focus on large scale utility power generation and transportation applications.

Question: What is the status of the required rulemaking for high efficiency clothes washers? When is the rule expected to be finalized?

Answer: The Department issued an Advance Notice of Proposed Rulemaking on November 14, 1994, requesting data and information to be used in the analysis for determining the next level of standards for clothes washers. The Department plans to publish a Notice proposing standards next year and issue a Final Rule implementing new standards in 1997.

Question: What is the current maximum improvement in energy efficiency for clothes washer that is technologically feasible?

Answer: It is estimated that a horizontal-axis washing machine will use 65 percent less energy than the current vertical-axis machines. Addition of a high-spin speed feature will slightly increase the energy used by clothes washers but will save approximately 25 percent of the energy currently used by clothes dryers. Combined use of these two design features will reduce the total energy used for washing and drying clothes by about 45 percent.

Question: Concern has been expressed that your proposed rule would put mid to small size companies at a competitive disadvantage. What are you doing to insure continued competition?

Answer: As in the case of all appliance standards rulemaking, the Department is very concerned about the impact of standards on the industry. In determining the standard level that can be justified for Clothes Washers, the Department will estimate the impact of the proposed standard on the short term and the long term return on investment (ROI) for both large and small companies. A standard level for which the ROI is estimated to be low or negative for any of these four cases would not be considered justified because of the potential for lessening of competition.

--

Question: Your budget includes a new initiative ($2.5 million) for operation and maintenance training for commercial building operators. How does this differ from the training initiative proposed last year which was not approved and why is this an important initiative? What specifically would be accomplished for this funding?

Answer: The training program proposed last year was a generalized program intended to help anyone involved make wiser energy-related decisions. This new program is in response to what private industry have told DOE during a series of workshops we've conducted as part of our ongoing assesment of customer needs. The building owners, operators, and managers who attended our workshops informed us that there is a great need for training on efficient building operations. They discussed how although today's building operators are very skilled at operating the buildings systems, many lack the knowledge of how to operate them at their high efficiency potentials. Many shared with us that typically a building's operational pattern is decided by reducing the number of tenant complaints or by operating the building with a highly restrictive budget. Training in energy efficient operation and maintenance gives the operators the necessary tools to increase the building's efficiency while still following all the other obligations imposed upon them.
The training of the building operators will occur through several mechanisms. We will work with related associations and distribute information to their memberships. Training seminars will be organized and held throughout the country. Documents detailing the operation and maintenance practices that increase building efficiency will be collected or produced and then distributed. Computer software that assist operators in making intelligent operation decisions will be developed and made publicly available. These and other methods will be used to ensure that the needs of private industry are answered and we produce the greatest positive impact we can on the operations and maintenance of commercial buildings.

Question: Your budget includes $2 million for cool communities. Does this differ, and if so how, from the initiative that was requested and rejected by Congress last year?

Answer: The Cool Communities strategy of coordinating partnerships among agencies and private partners remains the same; however, focus of DOE research and outreach investments would be more heavily focused on roofing and paving technologies in FY 1996 than would have occurred in FY 1995. This is due to results of heat island research focusing more heavily on altering reflectivity and emissivity of roofing and pavements rather than on windbreak, shading, and evapotranspiration effects of vegetation. Both surfaces and vegetation are important in community environments, but research appropriations of other agencies should be used to study and contribute energy efficiency effects of vegetation.

Research results continue to enhance public interest in the heat island problems. New information about photochemical relationship between urban temperature and ozone concentrations, for instance, is stimulating new interest in air quality and health effects of urban heat islands. Reducing urban air temperatures may provide direct air quality and health benefits in addition to the green house gas emission reductions and cost savings associated with air conditioning efficiency benefits.

Question: Congress added $2 million to the budget last year for R&D for natural gas cooling using desiccant technology. What is the Status of this funding and the research being conducted on the technology?

Answer: The Department and the Gas Research Institute sponsored a joint workshop at which the desiccant and HVAC industry expressed concern over the new Indoor Air Quality regulations being considered by OSHA and already implemented by ASHRAE Standard 62 Clean Air standard. The DOE responded by initiating two R&D efforts to assist industry in complying with these new regulations. One is a Request for Proposals, through Oak Ridge National Laboratory, to develop advanced desiccant systems that will be readily adaptable to new or existing building HVAC equipment to improve cooling performance and help improve indoor air quality. The second effort at the National Renewable Energy Laboratory, tests desiccant wheels donated by manufacturers, to establish test conditions and standards that do not exist for desiccant systems. These two complementary efforts directly respond to industry's needs expressed at the workshop.

Question: Your department did not request further funding for this technology for FY 1996. Does this mean that in FY 1996, the technology will be ready for industry commercialization?

Answer: Desiccant systems will not be ready for commercialization in FY 1996 but the work that will be done by the Department will help the manufacturers develop, test and bring advanced desiccant systems to the market by 1998.

Industry

Question: Could you comment on recent commercial success stories for the NICE^3 program?

Answer: Conceived in 1990 as a joint program of DOE and EPA, primary responsibility for the program has been assumed by DOE. During FY 1995, DOE contributed $6 million while EPA contributed $0.3 million. The implementation strategy for NICE^3 utilizes a competitive solicitation leading to grant awards to States in partnership with business. Final recommendations are made in a national review composed of experts from DOE, EPA, and DOC, supported by NREL. By accepting a grant, each grantee agrees to share the technology as a specific condition of the grant. Business participation is required in all applications, but the primary applicant must be a State agency on behalf of, or in conjunction with, a business partner(s). Local governments, State universities, private universities, private nonprofit organizations, and individuals may participate through a state agency.

Accomplishments to Date

Investments made in prior years are now producing results. Success is achieved when the entire cost of the investment is paid back; when energy is saved and pollution prevented; and when the technology is replicated on another production line or at another facility. At least two-thirds of 1991 and 1992 awards are considered successful (2 of 3 awards in 1991, and 5 of 6 in 1992). Two of the 8 awards in 1993 are already successful, with 10 additional successes expected within the year, from both the 1993 and 1994 grants. Because of the highly competitive nature of the grant process, similar success rates are expected of the 1994 and 1995 awards. Typical projects include $4 to $5.50 of private and state investment for every federal grant dollar. Of the twenty-nine projects funded to date, successful projects include:

o 1991- PPG Industries, Inc.,& Ohio Department of Development - Wastewater Recycle/Reuse of Water-Based Paint. Until 1992, PPG Industries disposed of 400,000 gallons of contaminated water each year from its automobile coatings plant in Cleveland, Ohio. Because the wastewater was considered hazardous, disposal was expensive. PPG developed a new filtration process to recycle paint and organic- laden water. Now, the company is recovering and reusing 95% of its wastewater, 380,000 gallons each year. The process is saving the company $280,000 annually and saving 3.6 billion BTU of energy formerly used for transportation and incineration of wastes. If adopted by other automotive coating companies, the new process could save the nation 66.3 billion BTU of energy each year (the equivalent of 460,000 gallons of oil). PPG produced a video of this process and over 20 corporations are expressing interest in reproducing the technique at their facilities.

o 1992 - AMPCO Metal Mfg. & Ohio Department of Development - Electric Tundish. AMPCO is using an inductively-heated tundish (a continuously-heated open vessel) for holding molten metal as a means to improve the quality of cast parts. Improved quality allows downsizing many parts, which in turn saves energy and pollution. The new system replaces a conventional system where combustion gases often contaminate molten metal prior to pouring, causing gas bubbles to become entrained in the cast part and weaken it. Additionally, the old system of melting mostly copper and bronze alloys emitted hazardous lead and copper vapors. The improved process allows production of a lead-free alloy for making kitchen and bathroom fixtures, overcoming EPA regulations about lead in drinking water. The project produced an unexpected extra benefit--a new alloy of copper can now be made in quantity rather than in small laboratory-scale batches. Additionally, the AMPCO plant remains in Ohio, a big benefit for local workers since this plant was in danger of being moved to the Caribbean like several other plants before it. AMPCO estimates savings of $1.2 million per year due to reduced compliance costs, operation and maintenance.

o 1991- FMC Corporation & Texas State Energy Conservation Office & Texas Natural Resource Conservation Commission, - Methanol Recovery From Hydrogen Peroxide Production. FMC, a Texas company, designed and put into operation a new steam distillation system to recover spent methanol in the production of hydrogen peroxide. This FMC innovation makes it possible to recover over 95 % of the methanol it uses to make hydrogen peroxide. FMC previously incinerated or disposed of spent methanol and hazardous waste products. In 1992, energy consumption was cut by 25 billion Btu/year and 1.9 million pounds of methanol were recovered, resulting in savings of $500,000 annually. Since FMC demonstrated this technology in Texas, two other FMC plants of this type are now recovering methanol with this process, one in West Virginia and one in Vancouver.

o 1992 Merck Pharmaceutical Division of DuPont & New Jersey Department of Environmental Protection and Energy - Ultrasonic Tank Cleaning. Merck Pharmaceutical is using a new ultrasonic technique to drastically improve the process of cleaning tanks used for manufacturing pharmaceuticals. The new method eliminates most hazardous wastes from contaminated solvents previously used for cleaning. Worker safety is increased since it is no longer necessary for workers to wear protective gear inside of the tanks. Time required for the cleaning process is reduced to 1-2 hours, saving time and labor costs over the old method which could take up to 50 hours per tank. The waste produced is not hazardous, and can be disposed of in the local sanitary sewer. DuPont-Merck will eliminate 100% of toxic, ozone-depleting emissions of methylene chloride with this technology, reducing the total amount of hazardous waste from this facility by 45% and saving over $293,000 per year. This technology has been transferred to both PPG Industries and the DuPont Automotive Products Division for cleaning paint tanks. Over 1000 companies can benefit from its use.

o 1992 - Damage Protection Products & California Integrated Waste Management Board - Recycling Paper into Pallets. Damage Protection Products is producing innovative waterproof shipping pallets made of 100% recycled components, mostly paper fiber. The new pallets are much lighter than conventional wood pallets and may be put back into the recycle stream at the end of their useful life. Because these pallets are smooth and light, they virtually eliminate wounds from nails and reduce back injuries from handling. In addition to the pallets, Damage Protection Products developed honeycomb structures from waste paper that can be used in housing construction at about $17 per square foot. Both of these products are part of a larger effort by the California Integrated Waste Management Board to increase the amount of recycled fibers in a wide variety of paper products with a goal of easing the burden on landfills. Each ton of post-consumer waste that is substituted for virgin wood fiber saves 60% of the energy and 50% of the water used to make paper, while simultaneously reducing wastewater by 35% and air pollution by 74%. The export market for this technology is growing substantially. Licenses are signed with Japan, Taiwan, and Indonesia.

o 1992 - AAP St. Marys & Ohio Department of Economic Development - Aluminum Recycling Improves Quality of Automobile Wheels. AAP St. Marys is recycling oil-contaminated aluminum chips from its alloy-wheel making process, assuring better quality products while lowering costs and reducing pollution. The on-site recycling technique recovers cutting oils for immediate reuse; eliminates the cost of shipping the chips several hundred miles for recovery into fresh ingot (a two-way trip); eliminates the energy associated with a complete melting cycle; provides much better control over the quality of the incoming alloy; reduces the time and manpower required to attain the proper alloy mix; and reduces liability issues surrounding wheel failure. The new technique is rapidly catching on, since AAP St. Marys produces about 30 million aluminum alloy wheels per year, and is now recycling over 300 tons of aluminum chips each month. Overall, energy consumption is cut approximately in half and virtually all cutting oils are reclaimed for reuse, eliminating a costly disposal requirement. The technique is saving an estimated $1.92 million each year by reducing operating and maintenance costs.

o 1992 - Fasson Films Division of Avery-Denison & Ohio Department of Economic Development Ultraviolet Curing of Pressure Sensitive Labels. Avery-Denison makes many types of pressure sensitive labels and is now is eliminating a polluting process for curing labels by using a new ultraviolet curing technique. Preliminary results are so superior to the existing solvent deposition process, that Avery-Denison declined the federal grant so that they could retain a proprietary business advantage. Accepting the funding would have meant sharing the process. However, without the NICE[3] grant solicitation process to catalyze action, the company would not have explored the technology and would still be using a costly, polluting method.

o 1993 Beta Control Systems Inc. & Oregon Department of Energy - Hydrochloric Acid Recovery System for Galvanizers and Steel manufacturers. Beta Control Systems of Beaverton, Oregon, is developing a state-of-the-art system for on-site recovery and recycling of hazardous spent hydrochloric acid. The system is designed for metal galvanizers and small- to medium-size steelmakers where hydrochloric acid is used to clean metal surfaces prior to galvanizing or plating. Only large costly systems were previously available. Each unit put into service is expected to save annually 200 tons of waste, $260,000 and 5 billion Btu of energy, much of which is attributed to lowered demand for electricity. Potential additional future markets include specialty metals and electronics.

o 1993 Alpine Technology & Oregon Department of Energy & Oregon State University -Advanced Optical Sorting for Glass Recycling. Alpine Technology of Eugene, Oregon, developed a technology that enables glass manufacturers to effectively utilize more refuse glass, supportive of recycling. The new method is less expensive and more accurate than current hand-sorting methods and overcomes traditional problems of ensuring the purity of recycled glass, often contaminated with colored glass, metals and ceramics. The system is successfully sorting up to 25 tons per hour of broken glass, raising its value from $14.00 per ton up to $22.00 per ton. While the cost benefits are significant, the energy and environmental benefits are even more noteworthy. This system reduces to about 2% the amount of recycled glass that is stockpiled or landfilled due to impurities, currently a very significant 67% of all recycled glass. Each ton of glass that can be recycled saves a million Btu over using virgin materials.

Question: What is the rationale for increasing this program by $2.5 million?

Answer: The demand for this program is substantially in excess of the supply of funding. In FY 1995, 164 proposals, requesting 47 million dollars in federal funding were received. Only thirteen (possibly 14) awards will be made. Clearly there is a case for increasing the funding for this program, whose goals integrate the missions of several federal agencies and improve the ability of state agencies to collaborate with industries throughout the states.

Question: Your budget for the Motor Challenge program goes up by $2.6 million. Why is this increase necessary and what are the potential energy savings associated with this initiative?

Answer: The increase is necessary to sustain the building momentum and participation within the Motor Challenge and the expansion of the scope of the Program. By the beginning of FY 1996, over 1,000 Motor Challenge Partners are expected. Activities within Motor Challenge that will require a significant increase in the FY 1996 funding over FY 1995 include:

- Continued and expanded support for the Showcase Demonstration teams to include technical assistance, tool and best practice development, independent performance validations, and case study development. With as many as 25 Showcase Demonstration projects, the Motor Challenge will help industry achieve as much as 200 million kilowatt-hours per year of electricity savings or about $5 million.

- Initiation of the Motor Challenge Excellence Partner program where companies are recognized for their excellence and leadership for the way in which their motor systems are managed, including practices involved with the design, specification, purchase, implementation and maintenance of efficient motor systems.

- Expansion of the regional collaboratives from 1 to 4. Currently, the Midwest Motor Systems Consortium has engaged market stakeholders in over 10 midwestern States to collaborate on initiatives (e.g., training) that assist end-users in implementing efficient motor systems.

- Expanded technical assistance and support to the rapidly growing number of Motor Challenge Partners. Partners will be supported by the Program to help arrange for regional workshops and in communicating to end-users about the resources available through the Motor Challenge.

- Expanded technical assistance and information dissemination through the Information Clearinghouse. Up to 5,000 calls to the Motor Challenge Information Clearinghouse will be serviced to provide Partners with information, technical assistance and perform library research.

- The initiation of reporting by industry to the Electric Motor Systems database and "Savings Tracker". Current industry interest indicates that once the Database is prototyped within the Showcase Demonstrations, up to 100 plants will report their savings in FY 1996.

The national energy savings opportunities of more efficient industrial motor-driven systems are enormous. Motor systems consume nearly 70% of all electricity used in industry. Industrial motor systems account for 8 percent of the Nation's primary energy consumption. The potential energy savings are 240 billion kilowatt-hours per year of electricity by the year 2010 - valued at $13 billion.

Motor Challenge was conceived and developed as a result of significant input from U.S. industry since 1992. Industry worked with DOE to identify the barriers which are impeding industry from adopting efficient motor systems in an accelerated and expanded manner. Similarly, industry suggested a variety of activities that DOE should either facilitate, and/or directly support and manage (see DOE 1993 Roundtable report). Accordingly, the purpose of the Motor Challenge program is to address barriers and opportunities through stakeholder initiatives in partnership with industrial end-users, motor and drive manufacturers, original equipment manufacturers (e.g., pumps, fans and compressors), distributors, utilities, and others involved directly or which influence the motor-driven systems market. By necessity, activities within the Motor Challenge are commonly focused on market relationships that don't naturally result from prevailing incentives in the marketplace. By acting in a facilitation role, DOE is improving the quality and dissemination of information, providing recognition of efficient motor-driven systems in various end-user settings, and helping to remove obstacles to enable the more rapid adoption of systems components and strategies.

One very important suggestion made by industry was for DOE to collaborate with market participants in the development of information, design-decision tools and best practices that would assist and benefit the broad spectrum of industry practitioners. This suggestion addressed the very significant and pervasive barrier throughout industry of a lack of information and the "know-how" in properly designing, implementing and optimizing motor systems. The Showcase Demonstrations will serve as a mechanism to prototype and validate the tools developed by DOE.

DOE's participation with industry is catalyzing market investment in opportunities that traditionally would receive less attention and priority by corporations. This situation has been clearly shown in the Showcase Demonstration projects where $2 million of FY 1995 Federal/DOE funds have spurred industry proposals valued at over $10 million. Likewise, DOE's sponsorship of a Teleconference on Efficient Motor Systems in May has already attracted 150 downlink sites involving almost every State in the U.S. The teleconference will broadcast nationally with an expected viewer participation of more than 5,000 and will focus on the needs of plant personnel in identifying efficiency opportunities. Because the teleconference will be interactive, participants will be able to call in questions, and also express their viewpoints on the issues at hand.

In summary, DOE's leadership provides a heightened awareness of the benefits of using efficient electric motor systems. A relatively small federal investment is being highly leveraged with the private sector to yield a large national return.

Question: Congress has proposed rescinding $13.7 million for the direct steelmaking initiative based largely on the large outyear costs and the fact that the industry proposal does not reach the mandated cost share requirements. What is the current estimate of the proposal currently pending before DOE and what is the industry cost share? Do you know where the plant would be built?

Answer: DOE received a proposal for a demonstration program from Geneva Steel dated August, 1993. The proposal requested $130.5 million in DOE funds over four years. These were to be matched by industry. However, industry's cost were to be reduced by $56.6 million through the internal sale of molten pig iron to the plant. The Metals Initiative requires that all proceeds which derive from any project must be used to reduce the total cost of the project. Thus DOE's cost share is reduced as well as the industry's. Therefore Geneva Steel has been advised that its proposal is being held in "abeyance" pending additional industrial cost sharing. This demonstration plant would be built at Geneva's plant in Geneva, Utah.

DOE has been advised by the American Iron and Steel Institute that it will submit a proposal in April. This proposal will request that DOE provide 50 percent cost sharing for a Waste Oxide Recycling project whose total cost is estimated to be $120 million. Therefore DOE's total cost share would be $60 million. The Government of Canada and the host company, Stelco, will provide $30 million. The balance of the funds will be provided (primarily) by the member companies of the American Iron and Steel Institute.

This plant would be built at Stelco's Lake Erie Works, in Ontario, Canada. Congress may be hesitant to support a project that will be built in Canada. However, the steel industry is an international industry and there are many precedents for developments in one country being commercialized in another. The Basic Oxygen Furnace, the dominant steelmaking process for integrated producers worldwide, was first developed in Austria and commercialized in the United States. Thin slab casting, a new technology that is revolutionizing the industry today, was developed in Germany and first commercialized in the United States.

The DOE/AISI Direct Ironmaking/Waste Oxide Recycling smelter is a product of an international effort. While the bulk of the research was performed in the United States, critical pieces were done in Mexico and Canada. Canadian and German scientist have made significant engineering contributions to the project, and there have been major technical exchanges with Japanese developers.

The United States' steel industry will be an early beneficiary of this technology. Towards the end of the century it will be required to make major investments in coke oven and blast furnace rebuilds. Therefore it will benefit greatly from any alternative low capital ironmaking process that eliminates the need for coke ovens.

We should not forget that the Canadians are making an investment in this demonstration plant and therefore are accepting part of the risk.

Question: Given that DOE has not requested any funding for the demonstration why are you objecting to the proposed rescission?

Answer: DOE requested and Congress appropriated funds for this project for fiscal year 1994. However, Geneva Steel's proposal did not contain the required 50 percent cost sharing, and the American Iron and Steel Institute's proposal was delayed pending the results of the Waste Oxide Recycling project. Therefore these funds were carried over into fiscal year 1995. Since DOE did not require additional funds for the project, none were requested for fiscal years 1995 and 1996. Rescission of the carryover from 1994 means that DOE's next opportunity to request funds from Congress to support this project will be for fiscal year 1997.

The demonstration of Waste Oxide Recycling is important because it offers the potential for energy savings, environmental improvement, and will pave the way for the future replacement of coke ovens and blast furnaces by direct smelting of iron ore with coal.

Question: Your budget proposes a new $15.7 million environmental technology partnerships which would appear to focus on undefined industries of the future. Why is this separate from your specific industry proposals and why is this an important initiative?

Answer: This request will fund critical research and development needs identified by key process industries, to overcome technical hurdles in making those industries more environmentally benign and resource efficient for the future.

The request is separate from specific industry research identified in the budget request for several reasons:

- The specific research identified in the budget request are for existing projects and commitments which have been underway by the Office of Industrial Technologies.
- The Industries of the Future is a strategy to focus federal research to that which is needed most by industry, and this funding will provide additional funding to meet those needs.
- Because each of the seven process industries which we are working with are at different stages in the development of their visions, and their respective research needs are at various stages of definition, it was impossible to predict and describe the exact projects which will be undertaken with this funding.
- The Industries of the Future is an important strategy because it focuses on the seven large process industries which consume the most energy (80 percent of all energy in the industrial sector) and produces the most wastes (90 percent of all wastes in the industrial sector): steel, aluminum, glass, chemicals, petroleum refining, foundries, and forest and paper products.

Question: Specifically what would be done with this money and what industries do you intend to target that are not already addressed by your ongoing programs?

Answer: As mentioned in the answer to the previous question, the specific research activities which would be undertaken were difficult to predict at the time the budget request was prepared. Several of the industry visions have been completed, and the research needs are becoming better known. For example, in the forest and paper products industry, six areas were identified as essential areas requiring fundamental improvements in order to achieve the vision, and ranged from Sustainable Forest Management to Environmental Performance to Recycling. The steel industry's vision is about to be unveiled, and the nearly finished version shows research needs in areas such as advanced sensors and integrated controls, to improved recycling techniques.

Question: In FY 1993 $470,000 was appropriated to begin assessment of a high solids black liquor program proposed by Babcock & Wilcox. Based on the merit review, considerable changes were made to the proposal to restructure the project implementation plan and a letter of Intent to Award was provided to B&W to initiate the project to carry out a design study. What is the status of that effort?

Answer: The report detailing the design study will be completed and forwarded to DOE by July 1995.

Question: Has DOE submitted its evaluation of the B&W project to the committee as planned during FY 1995?

Answer: DOE has not submitted an evaluation of the B&W project because we are waiting to receive the report in July 1995.

Question: How does the B&W proposal fit in with the pulp and paper mill of the future program?

Answer: The paper mill of the future program identifies six high priority areas of research including energy and environmental performance, and improved capital effectiveness which this project addresses. B&W is proposing to construct and operate a recovery furnace simulator to develop technologies to increase the efficiency, productivity and steam production of recovery boilers while reducing capital and operating costs and pollutants.

Question: Based on what has been learned from this activity to date is the high solids firing technology viable or has B&W indicated an interest in pursuing a gasification technology and what is your reaction to that technology?

Answer: Although high solids firing technology is viable, B&W has indicated an interest in including an option to add gasification to the pilot facility design. Gasification technologies are leading edge technologies and are being pursued for their energy, environmental, economic and safety benefits. The Department supports gasification in the pulp and paper industry and in biomass applications.

Question: What has been spent to date on the industrial demonstration of cheese whey to ethanol?

Answer: Approximately $950,000 has been spent to date on the industrial demonstration of the cheese whey to ethanol project. The industrial participant has provided cost-sharing of approximately $250,000 in the form of cash, equipment, labor, and facility space. Purdue Research Foundation has provided $50,000 towards the demonstration.

Question: What has been gained from this initiative? What is the potential market for this technology and what is the impact of not providing the $1.5 million requested in FY 1996?

Answer: This initiative has demonstrated the operation of a pilot-scale bioreactor to convert lactose (sugar) waste streams to ethanol and other higher value chemicals. Initially this technology was focused on cheese whey, but other applications for this technology include wastes from candy manufacturing and food processing. The economics and efficiency of the technology are impressive even at small scale. This will enable the technology to be adopted by small and medium size companies for on-site applications. Of the $1.5 million requested in FY 1996, only $300,000 is directed at the cheese whey to ethanol demonstration. These funds are needed to complete the industrial demonstration in mid FY 1996.

Question: Your budget includes $1.6 million for a new electrochemical dezincing process. Describe what would be undertaken in this initiative and what the outyear costs are? What is the industry interest in this process and what are the energy savings?

Answer: Galvanizing is a process which adds a zinc coating to steel to improve its resistance to corrosion. During the 1980s, the amount of galvanized scrap in automobiles increased greatly. Today these autos are returning to the steelmaking process as scrap. Development of a commercial dezincing process is essential because the zinc coating creates air and water pollution during steelmaking, decreases the recyclability of steelmaking dust, and adversely affects the properties of steel.

These funds will be used for a precommercial demonstration of electrochemical dezincing in a 200,000 ton per year module at LTV Steel, Indiana Harbor Works. The estimate of funds required for fiscal years 1997 and 1998 are $2,100,000 and $1,000,000, respectively. These will provide DOE's cost sharing for design and installation of the demonstration module, one year operation, and further product and process development activities. Industry will provide 53.5% of the total cost for this demonstration. Future commercial dezincing plants will require 2-5 replications of this module.

Industry interest: LTV Steel will perform, at its expense, a costly 1500 ton basic oxygen furnace melting trial. An automobile manufacturer has successfully completed melting trials in both a cupola and an induction furnace. A licensing agreement has been signed with a venture capital firm and steel mill service company to own and operate commercial plants. A zinc refining company is active in the project because it wishes to buy the zinc product.

The energy savings are 7 trillion BTUs per year. Electrochemical dezincing will also save $128,000 worth of zinc imports.

Question: You testified that in the ceramic area you are working on one application for CFCCs but did not reference the ceramics portion of the Advanced Turbine Systems. Do you still have ceramics activities underway as part of the program; and if you do, when can we expect to see some of these materials demonstrated in an industrial application?

Answer: The ceramic activities associated with the Advanced Turbine Systems (ATS) represent a major thrust and are proceeding well. These activities include the ceramic retrofit gas turbine project, supporting work led by ORNL, interaction with other parties working in the field and the primary ATS contracts. The ceramic retrofit gas turbine project is headed by Solar Turbines with twelve subcontractors, of which seven are ceramic suppliers and is targeted at retrofitting existing turbines in the field with ceramic parts. The project has completed designs on major components including blades, nozzles and combustor liners. Finished parts have been received and, starting in May 1995, full-scale turbine testing will be initiated and completed by December 1995. Target dates for demonstration include a spin-off of a combustor liner in late 1996 and a complete turbine field test in 1998. Arco has agreed to test the ceramic turbine. In supporting activities, ORNL has led a program to develop long-term test data on specific ceramics of interest. Data up to 10,000 hours is being collected with several specimen groups having passed the 3500 hour mark in February 1995. Data has been fed back to the contractor and has prompted several design changes. Data is being shared with two other major programs involving ceramics for different gas turbine applications. General Electric, in part with the EPRI and GRI, is studying ceramic nozzles for large utility turbines. Allied Signal, Inc. is developing ceramic parts in conjunction with DOE for transportation applications including auxiliary power generators. Lastly, the prime ATS contractors (Allison, Solar, Westinghouse and GE) are evaluating ceramics for ATS solutions. This work is preliminary but will be a focus area starting this year. The ATS program will conclude in the year 2000 with major systems demonstrations.

Question: You play an advisory role with the National Institute of Standards and Technology (NIST) and, through that role, coordinate in some way your R&D activities. Where do you have projects with NIST that coordinate the development of new manufacturing technologies to accelerate the introduction of new ideas into the marketplace? For example, if you continue to pursue a number of ceramics programs under the Advanced Turbine Systems activities have you investigated parallel and supporting manufacturing programs to better ensure the products of this effort arriving at a competitive price in the market?

Answer: DOE coordinates with NIST on three aspects of the ATS program: ceramic data collection, thermal barrier coatings, and manufacturing technologies for ceramics. NIST, with coordination and funding from GE, EPRI and GRI, is performing long-term testing of two ceramics; this data is in addition to the DOE funded data on four other materials. NIST, through the ATP program, is planning work on improved thermal barrier coatings for commercial utilization. The ATS program is funding work with industry on thermal barrier coatings for land-based turbines. The last activity is in the exploratory phase with NIST, a turbine manufacturer, and a process design firm. The goal is to establish cost effective ceramic processing and integration into the turbine manufacturers' product line. A study is underway to investigate what key changes can be made or studied to minimize risk in manufacturing.

The DOE and NIST supports the multi-agency Technology Reinvestment Program activity led by ARPA to improve ceramic processing as well. This was a new start for FY 1995 which has yet to be funded.

Question: The Advanced Turbine Systems program assume multiple contracts through the most expensive phase of the program. Can you explain why you should not be able to fulfill the goals of this program on schedule with only one contractor, thereby saving significant funds without delaying the value of the program to our national energy strategy?

Answer: The ATS industrial program calls for a down-selection part way through Phase 3, major component design and testing. Activities in Phase 2 have concentrated on initial design and evaluation of critical parts or novel approaches to the tough ATS goals. The two current participants, Allison and Solar, have very different design approaches. An early down-selection would result in picking a winner prior to completion of key Phase 3 work which could better differentiate between the two approaches. Key program goals include improved efficiency, low emissions, and reduced cost of electricity. Down-selecting now would increase the technical risk of the program being successful; any delays by the single winner would create a greater threat from international competition; and give the appearance of favoring one contractor over another prematurely.

Question: What are the potential risks and benefits of down selecting to one contractor at this point and what would the savings be both in FY 1996 and the outyears?

Answer: Risks in down selecting at this point include technical, market competition, and best value return for the government investment. The goals of the ATS program require significant technical milestones; a number of these are high risk. Down selecting in mid Phase 3 will allow these risks to be explored and understood, thus allowing the highest potential for success. The two industrial contractors in Phase 2 have very different approaches to solving the ATS goals. The gas turbine market is very competitive, especially now when the world is choosing gas turbines as their prime electricity generators. Carrying a second vendor into Phase 3 makes the private investment from this firm smaller to make it to the finish line. Two American product lines will offer a greater edge internationally than one. The incremental costs for a second vendor for part of Phase 3 is worth the investment.

The only benefit in down-selecting now would by the projected savings to the industrial ATS program, assuming down-selection in mid Phase 3, would approach $23 million over the next 3 to 3.5 years. Specific savings breakdown would be $6.5 million in FY 1996, $8 million in FY 1997, and $8.5 million in FY 1998.

Question: Industrial cogeneration appears to be well established in the commercial market. Will your Advanced Turbine Systems program produce a higher efficiency cogeneration unit and, if so, to how many of your industries of the future will this system provide a significant advantage?

Answer: While industrial cogeneration has grown substantially from 7500MW in 1983 to 32,000 MW in 1993, the deregulation of the utility market will open up a large additional market for small gas turbines. Cogeneration alone offers up to 60,000 industrial steam sites; independent power plants will add to this large market.

The ATS systems will provide the highest efficiency commercial plants in the world in the year 2000 at a price 10% below current cost of electricity and be environmentally preferred. At the 5 MW level, systems efficiencies will reach 42% which represents a 24% improvement in efficiency over the current 5 MW systems and can be cost effective in small power (distributed applications) even when compared to large central station generation. This will be an unbeatable combination in most markets, including the industries of the future. Already three of these industries use cogeneration and have listed advanced cogeneration as important to their future. These industries were Forest Products, Refineries and Chemicals. Other industries with major cogeneration activities include food processing and textiles.

Transportation Sector

Partnership for a New Generation of Vehicles

Question: The Partnership for a New Generation of Vehicles (PNGV) involves many Federal agencies any many industries. What is the DOE role in this effort? How are the DOE efforts coordinated with the efforts of the other participants? Are your program decisions subject to being over-ridden by the Department of Commerce?

Answer: With 65 percent of the total Federal budget for the PNGV, DOE is the technical "center of gravity" of the program and is playing a significant role in program implementation. DOE participates, along with the other government agencies and industry, in the initiative's Steering and Technical Committee efforts. DOE shares with Department of Commerce the management of the government's PNGV Technical Task Force, and in addition provides technical membership to make up the technical subcommittees. Also, DOE has led the initiative in defining the first technology inventory, co-led with industry the planning for the initiative, and supported PNGV administrative tasks, including direct support in the initiative's Secretariat Office at the Department of Commerce.

A broad-based industry/government technical organization has been formed to coordinate, integrate, and focus all PNGV technical activities, including those of DOE. This organization is staffed with technical experts from industry, government, and national laboratories. The "Technical Roadmap" developed by the PNGV through a government/industry effort also provides guidance to aid the coordination of efforts. Direct interface of technical program and project managers is an important aspect of coordination. Programmatic and policy decisions for the government portion of the program are the purview of a government Steering Group in which DOE has full participation. Activities are well coordinated and no DOE program decisions have been subject to over-riding by the Department of Commerce.

Question: What is the total DOE budget by program for PNGV and how does this compare to FY 1995?

Answer: The following tables display DOE's PNGV funding levels by technical program area for FY 1995 and for the FY 1996 budget request.

U.S. Department of Energy
FY 1995 Appropriations for PNGV
(Dollars in Millions)

Technical Area	EE			DP	ER	TOTAL
	OTT	OIT	OTFA			
1. Lightweight Materials	$29.14	$4.17		$11.89	$0.74	**$45.94**
2. Energy Conversion	70.47					**70.47**
3. Energy Storage	0.47					**0.47**
4. Efficient Electrical Systems						
5. Exhaust Energy Recovery					1.04	**1.04**
6. Analysis and Design Methods				3.71		**3.71**
7. Reduction of Mechanical Losses						
8. Aero and Rolling Resistance				0.78		**0.78**
9. Advanced Manufacturing		5.81		14.97	1.92	**22.70**
10. Improved Internal Combustion Technology	3.00			4.04		**7.04**
11. Emission Control				3.78		**3.78**
12. Fuel Preparation, Delivery, and Storage						
13. Hotel Loads				0.50		**0.50**
14. Crashworthiness and Occupant Protection						
Creative R&D with Suppliers						
TOTAL	**$103.08**	**$9.98**	**$0.0**	**$39.67**	**$3.70**	**$156.43**

4/26/95

DOE's PNGV Congressional Budget Request for FY 1996
(Dollars in Millions)

Technical Area	EE					
	OTT	OIT	OTFA	DP	ER	Total
1 Lightweight Materials	$34.48	$12.70		$9.00	$4.70	$60.88
2 Energy Conversion						
- hybrid	56.33				3.00	59.33
-fuel cells	42.23				3.00	45.23
-gas turbine & 4SDI	12.36				4.00	16.36
3 Energy Storage	9.65			3.00	1.80	14.45
4 Efficient Electrical Systems				0.50	0.20	0.70
5 Exhaust Energy Recovery						
6 Analysis and Design Methods				4.10		4.10
7 Reduction of Mechanical Losses						
8 Aero and Rolling Improvements				0.70		0.70
9 Advanced Manufacturing				14.90	4.00	18.90
10 Improved Internal Combustion Tech.	6.00			10.20		16.20
11 Emission Control				8.20	2.00	10.20
12 Fuel Preparation, Delivery & Storage						
13 Hotel Loads						
14 Crashworthiness & Occupant Protection						
Creative R&D with Suppliers			2.00			2.00
Total	$161.05	$12.70	$2.00	$50.60	$22.70	$249.05

4/26/95

Question: For the record, please provide all other agency funding for this initiative versus FY 1995 comparable funding levels? What are the projected outyear obligations?

Answer: The following tables show the PNGV funding levels by agency for FY 1995 and FY 1996, and portray the Department's estimated PNGV outyear projections. The outyear funding profile estimates what will be needed to fulfill the requirements and goals of the PNGV initiative.

PNGV-Related FY 1995 Appropriations
By Technical Area and Agency
(Dollars in Millions)

Technical Area / Agency	DOC*	DOD**	DOE	DOI	DOT***	EPA****	NASA	NSF	TOTAL
1. Lightweight Materials	$6.83	$7.03	$45.94	$0.50				$19.24	**$79.54**
2. Energy Conversion			70.47			2.75		0.85	**74.07**
3. Energy Storage	0.04		0.47			2.00		2.69	**5.20**
4. Efficient Electrical Systems		1.20					1.00	15.41	**17.61**
5. Exhaust Energy Recovery			1.04				0.20		**1.24**
6. Analysis and Design Methods	1.50	1.98	3.71				2.20	1.85	**11.24**
7. Reduction of Mechanical Losses	0.25							1.25	**1.50**
8. Aero and Rolling Improvements			0.78						**0.78**
9. Advanced Manufacturing	10.46	2.75	22.70					4.61	**40.52**
10. Improved Internal Combustion Tech	0.58	11.02	7.04			2.90	0.25	3.02	**24.81**
11. Emission Control			3.78				1.35	2.07	**7.20**
12. Fuel Preparation, Delivery & Storage								0.15	**0.15**
13. Hotel Loads			0.50					2.81	**3.31**
14. Crashworthiness & Occupant Protection								0.14	**0.14**
TOTAL	**$19.66**	**$23.98**	**$156.43**	**$0.50**	**$0.0**	**$7.65**	**$5.00**	**$54.09**	**$267.31**

* In addition to the base of $19.7 million, DOC throughout its NIST/ATP program has selected relevant projects with requested funding of $30.1 million. Contracts have not yet been reached on these selected proposals.

** DOD numbers are based on program personnel contact; still being worked within DOD with budget personnel and due to get back to me and I believe will also contact OMB directly

*** Numbers indicated in table are specific to PNGV and identified as such DOT program personnel indicate that an additional $20 million each year in R&D is related to the PNGV with dual purpose; in FY96, $1 million of the $20 million will be targeted specifically for PNGV

**** EPA numbers were verified but there is still discussion; EPA budget personnel will contact OMB directly

4/26/95

PNGV Congressional Budget Request for FY 1996
By Technical Area and Agency
(Dollars in Millions)

Technical Area / Agency	DOC**	DOD***	DOE	DOI	DOT	EPA	NASA	NSF	TOTAL
1. Lightweight Materials	$4.21	$6.30	$60.88	$2.50				$20.21	**$94.10**
2. Energy Conversion *		6.60	120.92			10.50	0.50	0.89	**139.41**
3. Energy Storage	0.03	2.30	14.45			2.00		2.82	**21.60**
4. Efficient Electrical Systems		2.89	0.70				2.00	16.18	**21.77**
5. Exhaust Energy Recovery							0.30		**0.30**
6. Analysis and Design Methods	1.50	8.30	4.10		5.30		3.00	1.94	**24.14**
7. Reduction of Mechanical Losses	0.45	1.00						1.31	**2.76**
8. Aero and Rolling Improvements		0.55	0.70						**1.25**
9. Advanced Manufacturing	2.38	3.75	18.90					4.84	**29.87**
10. Improved Internal Combustion Tech	0.43	8.56	16.20				0.25	3.17	**28.61**
11. Emission Control			10.20				0.95	2.18	**13.33**
12. Fuel Preparation, Delivery & Storage								0.16	**0.16**
13. Hotel Loads								2.95	**2.95**
14. Crashworthiness & Occupant Protection		2.18						0.15	**2.33**
Creative R&D with Suppliers			2.00						**2.00**
TOTAL	**$9.00**	**$42.43**	**$249.05**	**$2.50**	**$5.30**	**$12.50**	**$7.00**	**$56.80**	**$384.58**

* Includes hybrid, fuel cells, gas turbine, & 4-stroke direct injection technologies

** Additional DOC ATP solicitations in FY96 are expected but until selection end negotiation occur these additional PNGV-related amounts can not be specified

*** Additional DOD/ARPA/TRP solicitations in FY96 are expected but until selection and negotiation occur these additional PNGV-related amounts can not be specified

4/26/95

Partnership for a New Generation of Vehicles
Outyear Projections

Agency/Program	FY 1995 Approp.	FY 1996 Cong. Req.	FY 1997 Projection	FY 1998 Projection	FY 1999 Projection	FY 2000 Projection	FY 2001 Projection	FY 2002 Projection	FY 2003 Projection	FY 2004 Projection	FY 2005 Projection	TOTAL
DOE	**$156.45**	**$249.05**	**$302.25**	**$373.75**	**$406.25**	**$390.00**	**$357.50**	**$325.00**	**$195.00**	**$130.00**	**$65.00**	**2,950.25**
EE	**113.08**	**175.75**	**214.60**	**265.36**	**288.44**	**276.90**	**253.83**	**230.75**	**138.45**	**92.30**	**46.15**	**2,095.60**
OTT	103.08	161.05	193.44	239.20	260.00	249.60	228.80	208.00	124.80	83.20	41.60	1,892.77
OIT	10.0	12.70	18.14	22.43	24.38	23.40	21.45	19.50	11.70	7.80	3.90	175.39
OTFA	0.0	2.00	3.02	3.74	4.06	3.90	3.58	3.25	1.95	1.30	0.65	27.45
DP	39.67	50.60	27.20	33.64	36.56	35.10	32.18	29.25	17.55	11.70	5.85	319.30
ER	3.7	22.70	60.45	74.75	81.25	78.00	71.50	65.00	39.00	26.00	13.00	535.35

Question: What new PNGV initiatives are being undertaken in FY 1996 that were not ongoing in FY 1995?

Answer: All of the PNGV programs within Energy Efficiency for FY 1996 were ongoing in FY 1995 except for the "Creative Track" effort. This effort is an initiative designed to support innovation and creative ideas from small businesses, universities, and suppliers. The budget request for this effort in FY 1996 is $2 million. Even though this is a new PNGV initiative in FY 1996, the "Creative Track" effort is an integral part of the currently operating cooperative DOE/DOC Energy Inventions effort, but specifically for PNGV projects.

Question: Are all of the new PNGV initiatives the next logical step or are there components that are ancillary to the base program?

Answer: The "Creative Track" effort is not considered to be "ancillary" to the base program. From the standpoint of broadening the participation in the PNGV and assuring every opportunity for creative new ideas to enter the effort, this new initiative is very much the next logical step to add to the ongoing efforts.

Question: How far will the technologies being developed under the PNGV umbrella be taken with government funding and what industry actions are expected after completion of the government's involvement?

Answer: The government's contribution to the partnership is focused on long-term, high-risk R&D. The expertise and resources of the government are combined with those of industry to develop revolutionary, breakthrough technologies identified by industry as necessary to achieve the goals of the PNGV. As the technologies progress from basic R&D and technology development into product development and refinements in the 2001-2004 time frame, the automakers will go their separate ways, each to make the best commercial products it can out of the technologies developed in partnership with government. In parallel, during this 2001-2004 time frame, the government will support industry-led, jointly-funded sustaining R&D of value to all three U.S. automakers for the purpose of assuring the availability of technology advancements that may become necessary to remove technology shortfall impediments encountered during product development.

Question: What is the current industry participation in this initiative and how much of the PNGV program is market penetration related?

Answer: The PNGV was formed by the Federal government and the United States Council for Automotive Research (USCAR), which was created by American automobile OEMs (Original Equipment Manufacturers: Chrysler, Ford, and General Motors). Through this partnership, industry suppliers, small business, Federal laboratories, and universities will become involved, as required and appropriate. Additionally, a number of PNGV-relevant R&D projects that existed prior to the establishment of the PNGV have been incorporated into the PNGV program. These pre-existing PNGV projects involve a broad spectrum of industrial firms and universities.

In general, 75 percent of the government funds provided to Chrysler, Ford, and General Motors for research and development are passed on to suppliers and universities. In the case of DOE Energy Efficiency technologies, funds for R&D on advanced heat engines, materials, fuel cells, hybrid vehicles, and batteries are passed on to 97 suppliers and six universities.

The government contribution to the PNGV is focused on areas involving long-term, high-risk R&D. Market penetration will be considered by industry during it's product development process.

Question: What are the technical areas being pursued. How do you know which technical priorities to pursue? Is this initiative being industry driven?

Answer: Technical areas being pursued within the overall PNGV effort include: lightweight materials; energy conversion (hybrid, fuel cells, gas turbines, and four-stroke direct injection); energy storage; efficient electrical systems; exhaust energy recovery; analysis and design; reduction of.mechanical losses; aero and rolling improvements; advanced manufacturing; improved internal combustion technology; emission control; fuel preparation, delivery and storage; hotel loads; crashworthiness and occupant protection; and creative R&D with suppliers.

Government and industry have worked together to define the technical areas to be pursued in the PNGV program; and industry has indicated priorities within those technical areas. DOE projects address only the areas identified as highest priority; and these same areas offer potential dramatic petroleum savings and economic and environmental benefits to the nation as applicable to the overall DOE mission and strategies. Significant government/industry interaction through groups, committees, and workshops has been done to arrive at these priorities. From the standpoint of a program that addresses needs identified by industry, the PNGV is an industry-driven initiative. Also, industry participates as a partner with the Government in the overall steering and technical direction of the effort.

Question: It strikes me somewhat that in the PNGV program we are going in a variety of directions, batteries, fuel cells, ceramics, etc. Why is this a good idea or is this all designed to ultimately lead to one technology?

Answer: It is true that a variety of technologies is being pursued within the PNGV effort. This variety is necessary for two basic reasons: (1) technological advances in several areas is deemed necessary to accomplish a single "system solution," and (2) the pursuit of parallel paths in the early stages of the initiative is required to assure success.

As an example of the first point, advances in ceramics are required to achieve turbine engine efficiencies; these advances must be coupled with improvements in batteries in a hybrid propulsion system to achieve system efficiencies; and still further advances in lightweight materials must be coupled with these developments to reduce vehicle weight and reach the overall car fuel economy goal. This represents one pathway towards achievement of PNGV Goal 3, tripling automotive fuel economy. Another pathway might be advances in fuel cells, coupled with advances in batteries and lightweight materials. These two paths, using turbine engines or fuel cells, provide example of the second point.

One of the important aspects of the PNGV is the focusing of the technology development efforts on specific technical targets aimed at achieving the overall goal of an 80 miles-per-gallon (mpg) car. Intensive efforts, including government/industry workshops and task team planning and analyses, have been conducted to develop the "Technical Roadmap" which documents the targets for the individual technologies and the pathways, or how these technologies combine, to reach the overall system and goals. Another important aspect of the PNGV is the planned down selecting of technologies (narrowing to fewer) in 1997, as technology maturities become clearer and selections are made for the concept car; and again in the year 2000 with selections for the production prototype car.

Question: Could we save money by not funding all three auto makers and selecting one approach now? What are the potential risks and benefits? What are the potential cost savings?

Answer: The PNGV was formed by the Federal government and the United States Council for Automotive Research (USCAR). In general, since USCAR is the government's partner, U.S. automakers derive equal benefit from the government's contribution to the partnership and the government is not supporting, per se, three automaker teams in pursuit of three separate efforts with three separate approaches.

However, a number of PNGV-relevant technology R&D projects that existed prior to the establishment of the PNGV have been incorporated into the PNGV program and, due to their high-risk, high-payoff nature, several of these projects involve multiple technology pathways to enhance probability of success. The industry-led PNGV "Technology Roadmap" calls for down selecting these multiple technology pathways to the most promising approach in the 1997-1998 time frame. Currently, these technologies are not mature enough to allow a prudent down selection. To force a down selection now would risk the premature elimination of a technology that might have turned out to be the only viable path to achievement of the PNGV goals. There is no apparent program benefit to down selection at this time other than cost savings. Furthermore, the risk of ultimate program failure due to premature elimination of promising technology paths outweighs any cost savings that could be realized in FY 1996.

With regard to PNGV vehicle development, three separate approaches will be undertaken by the automakers as technologies move from basic R&D

and technology development into product development and refinements; however, these separate approaches will be funded by the automakers.

Question: How different are the three teams approaches?

Answer: The government is not supporting three automaker teams in pursuit of three separate efforts with three separate approaches. The government is supporting a number of PNGV-relevant technology R&D projects that existed prior to the establishment of the PNGV and, because of their high-risk, high-payoff nature, involve multiple technology pathways to enhance the probability of success.

Question: Other than in the PNGV program funding for batteries is down about $6 million in FY 1996 versus FY 1995. How is the battery technology work we are funding in connection with the PNGV different from what we have been doing with USABC in the past?

Answer: Analysis and planning efforts by government and industry experts has indicated that hybrid propulsion involving a combination of automobile power sources, one of which is electric power with a battery, most likely will be necessary to reach the PNGV goals. Hybrid propulsion requires a power-peaking device which meets different requirements than the energy devices for electric vehicles. The previous program effort has been largely focused on the batteries needed for an electric vehicle, which is not a part of the PNGV effort because EV battery development goals are different than what is needed for the PNGV energy storage devices. In particular, the goal for electric vehicles is to develop batteries with high specific energy while efforts for PNGV focus on high power. Thus, the prior efforts have emphasized energy storage devices for electric vehicles, but the PNGV high priority for hybrid vehicles has warranted an increased effort on power-peaking devices.

Question: The PNGV is being implemented significantly through programs in existence before the PNGV. What is the relationship of the PNGV to previously initiated programs and what has been the effect of the PNGV on these programs?

Answer: The PNGV is an historic new collaboration between the Federal government (eight participating agencies) and the United States auto industry. PNGV is a means by which these programs and activities are focused, accelerated, and integrated in concert with industry. PNGV is a catalyst or process by which the value of these previous programs to the nation is enhanced.

Question: How do you justify the increased funding level in the FY 1996 budget for the DOE PNGV effort?

Answer: The partnership is a cooperative program between the Federal government and the U.S. automotive industry. This effort is designed to strengthen the competitiveness of the U.S. automotive industry, significantly decrease the use of energy for transportation, and reduce emissions of air pollutants.

With energy currently in sufficient supply in the United States and inexpensive by world standards, American consumers have come to place a relatively low value on automotive fuel efficiency. This lack of market demand, coupled with realistic requirements for private sector return on investment, has produced little or no incentive for industry to invest in high-risk R&D on its own. However, since growing dependence on foreign petroleum poses a threat to U.S. energy security, long-term, high-risk R&D in fuel-efficient or alternative fuel vehicle technology is critical to the nation. It is also key to national interests that U.S. industry ultimately manufacture and market the new technology vehicles. For this reason, the automotive industry is essential to market affordable, highly-efficient vehicles that incorporate the breakthroughs from this government-supported R&D.

The FY 1996 requested funding level supports the continued development of the key technologies identified by industry as necessary to achieve the PNGV goals. Increased funding from FY 1995 levels is necessary to maintain schedules and contain risks within acceptable levels as projects progress into the hardware development phase. This funding is required to achieve PNGV goals within the time frame established and bring the various technologies to the maturity level where industry can make quality decisions to take these vehicle technologies to the marketplace.

Question: Do other nations have similar efforts or active programs which are pursuing similar technologies to those within the PNGV effort?

Answer: All major industrialized nations are involved in R&D on advanced automobiles (Germany and Japan are the most aggressive with programs that are similar in concept to the PNGV in that they involve government/industry teaming and some element of cost sharing). The European Council for Automotive R&D (EuroCar), a government/industry partnership involving ten European automakers and their respective governments, is managing $15 billion of European Union funding for a broad spectrum of 50/50 cost-shared programs that include advanced vehicle development, production and commercialization.

Japan is spending a minimum of $400-500 million per year on several longstanding programs that address an extensive range of automotive technologies including advanced batteries, advanced materials, gas turbines, and fuel cells, most of which are 50/50 cost shared and aimed at both domestic and foreign markets.

Question: Absent government involvement what would be the impact on the technical development of the next generation of vehicles?

Answer: Without the government's contribution of both expertise and funding to the partnership, it is unlikely that the industry would invest in the necessary high-risk R&D. To date, as a result of the lack of market demand, coupled with realistic requirements for private sector return on investment, industry has had little or no incentive to do so on its own and the situation remains unchanged. Therefore, in the final analysis, without the government's contribution and the resultant leveraging of the industry's technology development efforts, the industry will pursue its normal incremental, evolutionary response to perceived market demand.

Consequently, in the not-to-distant future the U.S. auto industry will be ill prepared to compete with the foreign automakers who are currently working in concert with their respective governments on advanced automotive technologies. In fact, as recently indicated by one of the U.S. auto industry vice presidents, the dissolution of the PNGV will result ultimately in the U.S. auto industry slipping to third place in the world market, behind Japan and Europe.

Question: What is the rationale for government support of the U.S. auto industry at a time when they seem to have regained their competitive edge?

Answer: The "Big Three" are still recovering from very recent, massive losses, that resulted in major restructuring of the industry and drastic cost-cutting measures. The survival of the U.S. industry may well depend on continuing to meet the challenge of foreign competition, especially in the rapidly changing market arena presented by California's new stricter emission standards.

Automakers around the world receive substantial government support to help them compete in the U.S. and world markets. In the same vein, PNGV is a R&D program with government making its unique technical resources, such those found in our national laboratories, available to industry. Strong foreign competition forces the automobile industry to focus its resources on near-term incremental changes that reflect strong consumer preferences.

Studies have shown that increased fuel economy is not high on the list of factors that influence consumers in the purchase of new vehicles. Consequently, there is very little incentive for the automobile industry to invest resources in fuel economy improvements. Government support can provide a reasonable assurance of steady progress and continue to focus the activities on areas that are in the public's interest but may not be high on the corporations' list of priorities.

The fortunes of the automobile industry are very cyclic. Revolutionary changes in technology require long sustained research and development programs. Little or no progress is made if the research is turned on and off sporadically depending on the profits of the corporation at any particular time.

Question: Auto emissions seem to have been reduced dramatically by the industry's technology developments. Why can't they get the job done on fuel economy without government assistance?

Answer: Auto emissions have been reduced progressively by industry over a long period of time in response to government statutory mandates. In a similar fashion, in response to government-imposed Corporate Average Fuel Economy (CAFE) mandates, the auto industry improved auto fuel economy. However, it took the industry 23 years to double the fuel economy. Since growing dependence on foreign petroleum poses a direct and imminent threat to U.S. security, the goal of the PNGV is to triple auto fuel economy in only ten years. This will require a massive national initiative that transcends the imposition of mandates, and combines the expertise and resources of the government with those of industry in an industry-led effort to develop revolutionary, breakthrough technologies tailored to automotive applications. The PNGV, which is the first government/industry partnership in the history of the U.S. automotive industry, was conceived to execute this initiative.

Question: Could you manage a reasonable program, and have a reasonable opportunity for success, without the large increases, particularly in the area of fuel cells and hybrids?

Answer: The technologies needing attention, as well as their relative priorities, were identified by the automotive industry. The spectrum of technologies on which the government is focusing are, by intent, the high-risk and, therefore, inherently immature technologies. Since their potential is high and their maturity is low, elimination of any given technology at this time would certainly present the risk of losing a technology that could have been a "winner."

Reducing the funding level of one or more selected technologies would, at the very least, impact the schedule if not the outcome. In either case, it is likely that our industry partners would consider the probability of success of the PNGV as conceived to be marginal.

Battery Technology

Question: One industry partnership with which we have some experience is the USABC. Is there anything to show for this substantial government investment?

Answer: The USABC expects to have at least one battery that will meet all of its mid-term performance goals in 1996. However, cost remains an issue that must be resolved through further development. The nickel-metal-hydride battery being developed by the Ovonic Battery Company has progressed to the point where General Motors has signed a joint agreement with this small company to help commercialize its battery system. The mid-term batteries from the GM/Ovonic joint venture may be available in pilot production by the end of 1996. The higher-risk, long-term batteries, that will provide from 5 to 7 times the energy of today's lead-acid batteries, are showing excellent progress and should be available for pilot production early in the next decade. Successful development of these batteries will make electric vehicles fully competitive with conventional gasoline-powered cars.

Question: A few years ago you persuaded Congress that battery technology was the secret to future vehicle technology. Now the PNGV is the technology of choice and you propose cutting back on battery research to fund this new initiative. Why?

Answer: The funding for the development of batteries for electric vehicles is reduced slightly in fiscal year 1996 as the work on mid-term candidates comes to an end and the number of contracts for long-term batteries is narrowed down. However, the total funding request for fiscal year 1996 for advanced battery development is increased by $3.0 million. The additional funds are for the development of high power batteries and ultracapacitors for hybrid and fuel cell vehicles in support of the PNGV initiative. The development of energy storage systems with higher power capability is essential to the success of the hybrid propulsion systems program, as well as for fuel cell vehicles. This work will be performed by battery developers and managed by the U.S. Advanced Battery Consortium in a manner similar to the existing program for electric vehicle batteries.

Alternative Fuel Vehicle Purchases

Question: Your budget proposes to spend another $20 million on alternative fueled vehicle purchases for the Federal fleet. How many vehicles is this expected to purchase and what is the mix of fuels?

Answer: The $20 million proposed in the Department's fiscal year 1996 budget will be used to cost share the incremental cost of about 12,500 alternative fuel vehicles. The DOE funds provided to the Federal agencies, including GSA, will provide full incremental costs for approximately 4,000 to 6,000 vehicles. The balance of vehicles purchased by the agencies, to meet the requirements, will have to be funded by agency contributions. Vehicle quantities are still uncertain, given that automakers have not yet announced which alternative fuel vehicles will be available in model year 1996, and prices have yet to be determined.

Automakers have indicated that several models of alternative fuel vehicles should be available, comprised of natural gas, propane, ethanol, and methanol vehicles. The Department anticipates that a small number of electric vehicle models will be available as well. In the past, Federal agencies have requested alternative fuel vehicles that are available in models that meet agency mission requirements, are available at reasonable cost, and for which refueling is available. Past requests have included large numbers of methanol and natural gas vehicles, with smaller numbers of ethanol and propane vehicles. In 1996, the Department expects natural gas vehicle requests to continue to be large, with increased numbers of ethanol and propane requests. Requests for methanol vehicles are expected to decline due to the low availability of vehicles in models needed by the agencies. The Department anticipates that a small, but growing, number of electric vehicles will also be requested.

Question: How much has DOE spent to date on alternative fueled vehicles and how many alternative fueled vehicles are in the Federal fleet as a result of the DOE initiative?

Answer: For fiscal years 1990-1994, DOE funding for alternative fuel vehicle incremental cost totaled $33 million. This included $8 million in fiscal years 1990-1992 provided to agencies for alternative fuel vehicles included in the Alternative Motor Fuels Act data collection program; $7 million provided for incremental cost in 1993; and $18 million provided for incremental cost in 1994.

These funds, leveraged with funds from other agencies, resulted in the acquisition of just under 17,000 alternative fuel vehicles for the Federal fleet by the end of 1994. Cost share provided by the Defense Department included approximately $13 million in fiscal years 1993-1994. Cost share provided by the U.S. Postal Service is estimated to be about $10 million in fiscal years 1993-1994.

Question: What is the linkage between our Federal fleet purchases and your Clean Cities program? Are these coordinated and, if so, how?

Answer: The Federal fleet alternative fuel vehicle program is closely linked to the Clean Cities Program, which brings together public and private stakeholders to identify and implement specific plans for alternative fuels at the local level. Almost all of these Clean Cities have Federal fleets as stakeholders. These fleets, along with the other Clean Cities stakeholders, have signed a Memorandum of Understanding which commits them to an alternative fuel vehicle purchase plan. The incremental cost of the alternative fuel vehicles procured for the Federal fleets to meet their commitments is funded by the Department of Energy. The Department works closely with the General Services Administration and other Federal agencies to ensure that the maximum number practical of alternative fuel vehicles is placed in Clean Cities locations. Each Clean City is given the choice of which alternative fuel they prefer, and wish to emphasize, and every step possible is taken to send Federal alternative fuel vehicles of the same fuel type to Clean Cities to support development of refueling infrastructure. Each year the coordination effort is refined and, in fiscal year 1995, 5,000 to 8,000 Federal fleet alternative fuel vehicles will be placed in existing Clean Cities, In addition, over 2,500 Federal fleet alternative fuel vehicles will be placed in communities that are working towards becoming a Clean City in fiscal year 1995.

By the end of March 1995, the Clean Cities program had created partnerships in 35 cities throughout the country. The overwhelming national interest carried the program past Secretary O'Leary's 25-city goal. These "pioneer" Clean City programs feature approximately 30,000 operational alternative fuel vehicles--reducing oil consumption and tailpipe emissions. The programs comprise over 1,200 stakeholder organizations nationwide, committed to significant increases in vehicle acquisitions and infrastructure investment over the next five years. Currently, the program covers over half of ozone non-attainment areas and continues to gain momentum.

Linkage of the Federal Fleet Program and the Clean Cities program allows the Department to leverage a small Federal investment in alternative fuel vehicles with other public and private resources to generate additional support for alternative fuels.

Question: Has any analysis been done that demonstrates a linkage between Federal fleet purchases and other vehicle purchases or developed infrastructure?

Answer: Numerous reports have been published on alternative fuels and vehicles with specific references to the Federal Fleet Program, including reports by the General Accounting Office (1991, 1994), the Interagency Commission on Alternative Motor Fuels (1991, 1992), the Federal Fleet Conversion Task Force (1993), and the Energy Information Administration (1994). These reports cite the important role of the Federal Fleet Program in advancing the alternative fuels industry. The First Interim Report of the Interagency Commission on Alternative Motor Fuels, published in 1991, stated that the Federal alternative fuel vehicle programs stimulated the initial production of light duty alternative fuel vehicles by the U.S. automakers. In the Federal Fleet Conversion Task Force's report, the main recommendation for overcoming the infrastructure/vehicle availability barrier to commercialization was that "the Federal government, together with State and local governments, take the leadership role in aggregating the demand for several models of certified low-emitting AFVs and in making a commitment to purchase large numbers of such vehicles." In reports by the General Accounting Office and the Energy Information Administration the Federal Fleet Program is mentioned as being responsible for the increase in the market penetration of alternative fuels. Furthermore, the Energy Information Administration stated in Alternatives to Traditional Transportation Fuels, an Overview, "The coordination of Federal, state, and local planning for vehicle purchases adds incentives for original equipment manufacturers and fuel suppliers to produce AFVs and ATFs [alternative transportation fuels], by decreasing the uncertainties that surround the introduction of any new technology." These reports clearly establish the importance of the Federal Fleet Program and the impact it has on the alternative fuels industry.

Many of these reports also recommend that Federal support for alternative fuel vehicles should be during the early years of introduction into the marketplace, and should decline as the technologies mature. For example, early Federal support helped encourage automakers to introduce methanol vehicles, which were soon available at very low cost. The Department hopes to repeat that success with natural gas, ethanol, propane, and perhaps even electric vehicles.

Question: Could the goals of this program be accomplished through an Executive Order mandating Federal agencies to purchase alternative fueled vehicles?

Answer: The Federal agencies are already mandated, under Section 303 of the Energy Policy Act of 1992, to acquire alternative fuel vehicles. The Department is given the responsibility for coordinating Federal compliance with this requirement. The Department's leadership role has been strengthened by Executive Order 12844, signed by President Clinton in 1993.

Section 303 also authorizes appropriations, as necessary, to the Department for the incremental cost of these alternative fuel vehicles through fiscal year 1998. During the early years of the Federal Fleet Program, 1993-1995, the Department has taken a strong leadership and funding role to ensure that alternative fuel vehicle acquisition requirements, which applied to the Federal fleet as a whole, were met.

Starting in 1996, however, requirements for alternative fuel vehicle acquisition will be percentages "of the total number of vehicles acquired by a Federal [agency] fleet." The Department believes it is appropriate for each agency to become more involved in planning and funding alternative fuel vehicle acquisition to meet the specific agency requirement. The Department is working closely with affected agencies to use 1996 as a transition year to gradually shift the funding responsibility to the individual agencies. Analysis is currently underway at the Department and the Office of Management and Budget to determine an appropriate transition approach.

Question: What problems have been experienced, particularly in terms of working with GSA, with this program and what progress has been made on addressing these problems?

Answer: The Federal Fleet Program has been a success. Each year since 1993, the Federal agencies have met and exceeded the quantity of alternative fuel vehicles required by the Energy Policy Act. The U.S. Postal Service, the Defense Department, the General Services Administration (GSA), and many other agencies have all contributed to meeting these requirements.

Problems encountered by the program are those to be expected when attempting to introduce new technologies into the fleet operations of very large organizations. Several agencies, including GSA, have had some difficulties in modifying procedures, systems, and computer software developed originally to handle conventional vehicles exclusively. In addition, the GSA has not implemented the authority provided in the Energy Policy Act that would average the costs of alternative fuel vehicles across the entire conventional fleet. Resolution of these issues would reduce the need for DOE to provide incremental funding to the agencies, and make it easier for the Department to provide that funding when needed.

Coordination of alternative fuel vehicle placement was also lacking in the early years of the program. With the establishment of the Clean Cities program in 1993, the Department has been working closely with the GSA, the other agencies, and the alternative fuel suppliers to better coordinate placement of alternative fuel vehicles in communities that are ready and willing to receive them.

The Department has worked with GSA to encourage the automakers to produce additional alternative fuel vehicles. This coordinated effort has worked well in most cases. When automakers are not able to provide the types and quantities of alternative fuel vehicles needed by the Federal agencies, the Department has worked with the alternative fuel industry to help fill the gap. The U.S. Postal Service and the Defense Department have both been open to the use of conversions and obtaining alternative fuel vehicles from small manufacturers. The GSA has been much more tentative about acquiring large numbers of vehicles from these sources. However, just recently, the GSA has indicated a willingness to convert some vehicles and to issue a solicitation for large numbers of "upfitted" vehicles which provide full warranty, emissions certification, and crash testing.

These issues are currently being studied by the Department, the GSA, and the Office of Management and Budget. In addition, the Department works closely with all the agencies in numerous interagency forums to address and resolve similar issues related to the alternative fuel program.

West Virginia University/Hercules R&D Program

Question: Your budget says you will complete the WVU/Hercules Engine Company cooperative R&D program. What has been spent to date on this initiative and what has been accomplished?

Answer: Funding for the WVU/Hercules project has totaled $750,000; i.e., $500,000 in FY 1994 and $250,000 in FY 1995. The WVU/Hercules research effort on lean burn natural gas engines has been highly successful in developing strategies for microprocessor-based, closed loop engine controls to achieve emission reduction of natural gas heavy duty engines. Emissions tests demonstrated that the current style of open loop control does not guarantee low emissions when the quality and composition of the natural gas fuel changes. A closed loop engine control strategy that accounts for varying fuel effects was implemented on a Hercules 3.7 liter, 4-cylinder engine, demonstrated and shown to be successful in achieving low emissions. In addition, the development and design of a knock detection system for protecting engines against failure is nearing completion. Final sensor selection and testing is nearly completed; and control system hardware has been interfaced with the existing engine gas fueling system and performance testing is being conducted at this time.

Question: What will be accomplished with the $500,000 requested in fiscal year 1996?

Answer: The closed loop engine control approach and knock detection hardware will be incorporated into a total strategy for minimizing the lean burn engine emissions while maintaining acceptable engine performance. The chosen strategy will be demonstrated on a wide range of natural gas compositions while operating on a dynamometer. In addition, lean burn natural gas engine emissions will be correlated with vehicle emissions through testing on a chassis dynamometer, and testing of the lean burn gas oxygen sensor will be completed. In support of these testing programs, several subtasks will be conducted. The West Virginia University stationary emissions testing laboratory will be used to test a variety of fuels and catalysts. The speciations laboratory will be used to characterize the specific smog-forming constituents in the exhaust. Demonstrations will be conducted of dual fuel (natural gas and gasoline) engine technologies.

Question: When you say this will be "completed" does that mean the work will be done or the program is being terminated?

Answer: The current program provides for the design and demonstration of an optimized closed loop, lean burn natural gas control system that can be applied to Hercules and other compressed and liquefied natural gas engines. This research will be completed in fiscal year 1996.

Question: Is there more that can or should be accomplished in this partnership? How much if anything are WVU and Hercules providing for the initiative?

Answer: Yes, there is more work that can be accomplished through this partnership. There is an ultimate goal of meeting California ultra-low emissions vehicle standards on a lean burn natural gas engine without the need for catalytic converters. To achieve this goal an individual cylinder control system will need to be developed that will all but eliminate the oxides of nitrogen emissions associated with cylinder-to-cylinder variations. It is proposed to develop this type of a system during fiscal years 1997 and 1998.

The following table shows the funding provided by WVU and Hercules towards this project. The WVU funds are for salaries, equipment and supplies. The Hercules funds are for engines and technical support, and include $51,000 of direct funds to WVU in 1995 for baseline testing of the same engine on diesel fuel.

WVU/Hercules Cost Sharing

Fiscal Year	WVU	Hercules
1994	$40,000	$ 35,000
1995	$50,000	$101,000
1996 (expected)	$60,000	$ 50,000

It is expected that in fiscal years 1997 and 1998 Hercules will support this project with equipment and technical support at a rate of $75,000 per year and WVU will continue to provide salary, equipment, and supplies at a rate or $50,000 per year.

Fuel Cell Locomotive

Question: How much has been appropriated to date for the fuel cell locomotive?

Answer: For fiscal years 1994 and 1995, a total of $3 million has been appropriated to DOE for the fuel cell locomotive program.

Question: What is the potential market for these and why is this a priority in the PNGV initiative?

Answer: Industry foresees the coming of legislation which will require the rail industry to reduce emissions in the rail sector. Of the two options identified, i.e., electrification and fuel cell power, the industry sees fuel cells as being the more economical and much more desirable technology to pursue for the long-term. As a result, palpable interest has been displayed by locomotive manufacturers (GM/Electromotive, General Electric) and by the major railroads (Burlington Northern, Union Pacific, et al). Two leading U.S. fuel cell developers (International Fuel Cells and Westinghouse Electric Corp.) have expressed interest in taking on this challenge. Due to the higher fuel efficiency of fuel cells compared to diesels, the railroads see fuel cells as a potential means to lower their operating costs and to better compete with their competition (trucks).

The locomotive fuel cell program provides an excellent platform for the early entry of fuel cells in heavy duty transportation applications. An aggressive and successful locomotive program will enhance U.S. competitiveness and expedite the development and commercialization of fuel cells in light duty transportation.

Question: What has been accomplished and what will be done for the $1 million for the fuel cell locomotive in the FY 1996 budget?

Answer: The fuel cell locomotive feasibility study prepared by NASA's Jet Propulsion Laboratory and sponsored by South Coast Air Quality Management District (SCAQMD) has been completed. The fuel cell locomotive request for proposals (RFP) for Phase I was released by the DOE Nevada Operations Office on January 31, 1995, with a response date of April 5, 1995. Phase I will be the design phase lasting 18 months involving one or two contractor teams to be led by a locomotive manufacturer and include a fuel cell developer. Phase I tasks include the evaluation of competing technologies through trade-off studies and life-cycle cost analyses, the development of a preliminary design of a 1-megawatt fuel cell test locomotive, technology readiness testing of critical components, and development of a conceptual design of a full-scale fuel cell locomotive (2 to 4.5 megawatt).

DOE plans a separate solicitation for Phase II, which will be the demonstration phase lasting 36 months. One of the contractor teams will be chosen to fabricate the 1-megawatt test locomotive and conduct testing over a range of duty cycles to obtain performance and cost data. Other Phase II tasks include updating the conceptual design of the full-scale fuel cell locomotive, updating life cycle cost estimates, and preparing a preliminary commercialization plan.

Technical and Financial Assistance

International Market Development

Question: Your international initiative has grown considerably in three years from $704,000 in FY 1994 to $5.1 million in FY 1996 including nearly doubling last year. Could you elaborate on this initiative and what the American taxpayer gets from the money spent in the international arena?

Answer: While there is an appearance of a doubling in funding for the international market development initiative between FY 1994 and FY 1995, this should not be misconstrued as representing solely growth in the programs. In FY 1995, funds were requested for programs which had previously been funded by other sources within the Department and which had been consolidated under the international market development initiative. Specifically, the Asia Pacific Economic Cooperation (APEC), the Center for the Analysis and Dissemination of Demonstrated Energy Technologies (CADDET), the Greenhouse Gas Technology Information Exchange (GREENTIE), and the Energy Efficiency Centers. In FY 1994, funds were requested under this line item solely for initial start-up expenses of the Committee on Energy Efficiency Commerce and Trade (COEECT). Further, the FY 1996 request for these programs of $5.1 million does not represent a significant increase over the $4.4 million requested for these programs in FY 1995 and that increase results from a requested increase for COEECT in order to bring it to a comparable funding level with the Committee on Renewable Energy Commerce and Trade (CORECT), COEECT's counterpart for renewable energy.

The international market development initiative is comprised programmatically of COEECT which, with significant input from U.S. industry representatives, determines export strategy; APEC which provides a conduit for project identification in the asian markets; CADDET and GREENTIE which assist in disseminating information about the benefits of U.S. energy efficiency technologies and provides energy decisionmakers with access to U.S. vendors; and the Energy Efficiency Centers which function as "ports of entry" for U.S. firms seeking to do business in the various regions and assist the Department in conducting training activities. These efforts benefit the U.S. taxpayer by creating new jobs in the U.S. as a result of enhanced exports of U.S. products and services abroad.

These activities also increase U.S. tax revenues from foreign sales. Indeed, SEVEn, the Energy Efficiency Center in the Czech Republic assisted one U.S. firm in obtaining $30 million worth of contracts for energy efficiency services. **The U.S. tax revenue generated by these contracts alone is greater than $1.5 million, the original U.S. government funding to all the Energy Efficiency Centers combined.** This combination of programs, conducted in close consultation with U.S. industries, is thought to be a very good investment for the taxpayer in making the US energy efficiency industries more competitive in the $81 billion world market for energy efficiency products and services.

Question: Why is export assistance such as that provided by COEECT an appropriate function of DOE isn't this more appropriately handled by Commerce?

Answer: The export assistance provided by COEECT, and the related international market development programs, support the Department of Commerce's efforts in a very direct manner. COEECT coordinates very closely with the Commerce's Trade Promotion Coordinating Committee (TPCC) which has been tasked with coordinating all U.S. government's export assistance activities. In so far as COEECT, and it's counterpart for the renewable energy industries, CORECT (Committee on Renewable Energy Commerce and Trade, work closely with U.S. industry in developing the most appropriate strategies to assist in increasing U.S. exports, the TPCC has acknowledged COEECT and CORECT as the most efficient means of addressing the specific export assistance needs of those industries. Finally, a representative from Commerce participates as a member in both COEECT and CORECT activities.

Question: The Committee agreed to modest funding for the foreign centers with an understanding that the funding would not represent an ongoing commitment and yet funding has grown from $100,000 to almost $1 million. What is the justification for these centers and what is the total US funding by agency and what are the local government providing? How long is US government support envisioned for these international centers?

Answer: The Department believes that the Centers, which are private Non-Governmental Organizations (NGO's), are tremendous sources of information and regional expertise that can provide very valuable assistance to U.S. firms seeking to do business within those regions. The Centers remain current on the energy issues, who the energy decisionmakers are in the various regions, and can provide U.S. firms with project identification and technical assistance. This "port of entry" assistance has proven to be profitable to U.S. firms. One profitable experience of the Center in the Czech Republic has been recounted above, however, that Center has also assisted over two dozen other U.S. firms conduct business in the region. Another example is the Center in Poland, FEWE, which has facilitated a joint venture between a U.S. firm and a Polish partner to produce core separators in Poland. The value of the contracts signed to date approaches $2 million. Currently only one of the Centers, the one in Sofia, Bulgaria, is receiving U.S. AID funding of $200,000. In so far as the Centers are NGO's it is not known if they receive funding from their host country governments, however, the Czech Center was asked by the federal government to draft the country's energy efficiency legislation. In addition to providing market analyses and facilitating business contacts, the Centers are also instrumental in assisting the Department conduct training of local energy decisionmakers and operators in the benefits of U.S. efficiency technologies. These efforts raise the knowledge of and familiarity with U.S. products and are intended to result in purchases of U.S. products and services. The Department hopes to contract for services with the various Centers for export and training assistance as long as U.S. firms continue to benefit from their expertise and contacts and as long as such activity proves to be a cost effective means of providing such assistance.

QUESTIONS SUBMITTED BY CONGRESSMAN DAVID E. SKAGGS

Federal Energy Management Program Savings

Question: Since its inception, how much money has the Federal Energy Management program saved the federal government in utility bills?

Answer: The following tables show Federal government energy consumption, costs, and avoided costs for the two Congressionally-mandated goal periods during which FEMP coordinated Federal Energy Management: 1975 to 1985 and 1985 to 1993 (the latest year for which data is available). The cumulative cost avoidance for the two periods are as follows:

	1975 to 1985	1985 to 1993
Buildings and Facilities	$ 5.596 billion	$ 2.701 billion
Vehicles and Equipment	$ 3.362 billion	$ 1.760 billion
Excluded Buildings/Industrial	$-0.091 billion	$-1.866 billion
Total Cost Savings	$ 8.866 billion	$ 2.596 billion

Question: Under the President's budget plan for this program, how much more will it save the government between now and the year 2000?

Answer: The Federal government is the largest energy consumer in the United States. In FY 1993, the Government reported direct energy use of nearly 1.3 quadrillion British thermal units (quads) or the equivalent of 214 million barrels of oil (MBOE). Given the losses of electricity production and transmission to Federal facilities, the total energy use required on site and at generating facilities to satisfy Government needs was in excess of 1.7 quads or 300 MBOE. This represents over 2 percent of all energy used within the United States in 1993. It also represents a cost to the taxpayers of over $9.0 billion.

The energy use within the Government is distributed throughout 100+ agencies, corporations, commissions, boards, and independent Federal organizations. Within this array of organizations, there are a few preponderant agencies. The Department of Defense (DOD) accounts for 84 percent of all reported energy use and the top six agencies account for 95 percent of all reported energy use.

Anticipated government savings from all funding sources is, $870 million by 2000, $4 billion by 2005 and $15 billion over the life of the projects. Accelerating the investment in energy, water, and renewable projects will save $1 billion by 2000, $5 billion by 2005 and $21 billion over the life of the projects.

With the exception of DOD and the Department of Transportation (DOT) which are dominated by mobility energy use requirements, all other agencies have larger facility energy use requirements. DOD together with the General Services Administration (GSA), the Department of Veterans Affairs (VA), the Department of Energy (DOE), and the U.S. Postal

Service, own 93 percent of all Federal Agency floor space currently reported in the FEMP's annual report to Congress and use an equivalent percentage of all energy used to operate Federal buildings.

The Federal government can save an estimated $400 million per year with a conservative 10 percent reduction in mobility energy use and $1 billion per year upon achieving a 30 percent reduction in building energy use.

While no comparable data exists for Federal water use, the estimated annual Federal water/sewer bill approaches $1 billion per year. It has also been estimated that the Federal government could save over $240 million per year by installing cost effective water conservation measures.

WITNESSES

	Page
Breznay, George	241
Ervin, C.A	519
Furiga, Richard	259
Godley, P.F	259
Gross, Tom	519
Hakes, J.E	151
Hunter, Captain Ernest	259
Kripowicz, Robert	519
McClelland, V.J	191
McKinley, Gail	519
Nordhaus, Robert	221
O'Leary, Hon. H.R	1
Roy, Charles	259
Rudins, George	259
Singer, Marvin	259
Smedley, E.E	1
Spiller, Reginal	259
Swink, Denise	519
Tierney, S.F	191
Vivona, J.F	1

INDEX

Secretary of Energy

Page
Annual Energy Outlook 60
Biography, Vivona, Joseph F 25
Clean Coal Technology 33
Eliminating Department of Energy 48
Energy Conservation 58
Energy Projections 59
Energy Research 61
Enhanced Oil Research 33
Environmental Cleanup at Hanford 36
Federal Energy Management Program 58
Interim Storage of Nuclear Waste 45
National Energy Policy 52, 66
Natural Gas Supply Projection 64
Natural Gas Vehicles 53
Naval Petroleum Reserves 27, 56
Nevada Test Site 47
Nuclear Energy Industry Relationships 51
Oil and Gas Research 31
Opening Remarks 1
Partnerships with Department of Energy 62
Petroleum Supply Projection 64
Realignment Initiative 44, 63
Reductions in FY 1996 Funding 47, 51
Role of Nuclear Energy 52
Sale of Assets 26, 30
Sale of Highly Enriched Uranium 26
Sale of Power Marketing Administrations 35
Strategic Petroleum Reserve 55
Technology Partnerships 65
U.S. Technology in Foreign Countries 50
Waste Isolation Plant Project 34
Additional Committee Questions:
    Clean Coal Technology 123
    Economic Regulation 130
    Emergency Preparedness Functions 129
    Energy Conservation 100
    Energy Information Administration 126
    Federal Energy Management Program 109
    Fossile Energy Research and Development 112
    Natural Gas Vehicles 107

Page

Additional Committee Questions—Continued
  Naval Petroleum and Oil Shale Reserves:
    Funding Shortfall in NPR 120
    Impact of Caretaker Budget for NPR 116
    Setting Up a Government Corporation for NPR 114
  Partnership for a new Generation of Vehicles 102
  Strategic Petroleum Reserve 117
  Trip to China and India 67
Questions Submitted by Chairman Ralph Regula:
  Energy Policy Act Section 2306 143
  General 131
  Naval Petroleum Reserve 141
  Prioritization of Proposed FY 1995 Rescissions 138
  Strategic Petroleum Reserve 139

Energy Information Administration

Administrative Support Services 162
Computer Facilities 162
Data Collection 159, 163
Electronic Access 159
Energy Consumption 161
Energy Models 161
Household Vehicles 165
Oil and Gas Program 160
One Percent Setaside 162
Opening Remarks 151
Publications 164
Reductions in FY 1996 Budget 165
User Fees 166
Additional Committee Questions:
  Administrative Support 185
  ADP Services 184
  Annual Energy Outlook 176
  Distribution of Funding 173
  End Use Consumption Surveys 178
  Global Climate Change Action Plan 182
  Overview of EIA Budget Request 168
  Potential Budget Reductions 168
  Publications 169
  Reformulated Gasoline 181
  Set-Aside 185
Questions Submitted by Congressman Sidney Yates: Energy Information Administration 187

Office of Emergency Preparedness

Biography of Vincent J. McClelland 198
Energy Emergency Reports 205
Intelligence Community Briefings 204
Oil Shortage 201
Opening Remarks 199
Selling EIA Data to Its Customers 202
Additional Committee Questions:
  Administrative Support 214
  Emergency Operations Center 212

Page

Additional Committee Questions—Continued
- Emergency Management System 214
- National Defense Executive Reserve 211
- Overview of Budget Request 207
- Seasonal Energy Assessment Conferences 213
- Strategic Petroleum Reserve 209
- Travel Budget 211

Questions Submitted by Congressman Sidney Yates: Emergency Preparedness 216

Economic Regulatory Administration

Administrative Support Services 226
Attorney Full-Time Equivalents 228
General Counsel's Budget 225
Oil Overcharge Cases 224, 225, 227
Opening Remarks 224
Additional Committee Questions:
- Case Resolution 232
- Field Offices 237
- Miscellaneous Expenses 239
- Reimbursement to EIA 238
- Stripper Well Cases 237
- Transfer of Function 230

Questions Submitted By Congressman Sidney Yates: Economic Regulation Case Load 240

Office of Hearings and Appeals

Benton County, Washington Case 248
Collection of Attorneys' Fees 248
FY 1996 Budget Request 249
Oil Overcharge Cases 246
Opening Remarks 246
Additional Committee Questions:
- Administrative Support 256
- Freedom of Information and Other Activities 255
- Non-Compliance Filings and Refund Applications 251
- Outyear Budgets 255
- Overcharge Funds 253
- Security Clearance Appeals 252

Questions Submitted by Congressman Sidney Yates: Changing Work of the Office of Hearings and Appeals 257

Fossil Energy

Advanced Gas and Oil Technologies 333
Alaskan North Slope Crude Oil 327, 328, 330
Average Well Production in the Far East 297
Biographies:
- Furiga, Richard 293
- Godley, Patricia Fry 285
- Hunter, Captain Ernest R 292
- Roy, Charles 294
- Rudins, George 287
- Singer, Marvin 290

Page

Biographies—Continued
  Spiller, Reginal ... 288
Clean Coal Technology Program ... 332
Coal Liquefaction ... 356
Coal Research ... 330
Cogeneration ... 357
Energy Supply Portfolio ... 300
Export Potential for Fossil Energy Technologies ... 343
Federal Investment on Technologies ... 308
Fossil Energy Technologies Brought to Market ... 306, 324
Fusion Research ... 342
Global Market for Fossil Energy Power Generation Technologies ... 343
Influence of Federal Investments on Technologies ... 308
Mild Gasification Project in Illinois ... 301
Natural Gas and Oil Technologies ... 305
Naval Petroleum and Oil Shale Reserves ... 304, 326, 335, 348
  Funding to Establish a Naval Petroleum Reserve Corporation ... 338
  NPR Sale Rationale ... 353
Oil and Gas Technologies ... 355
Opening Remarks ... 296
Petroleum Imports ... 354
Power Marketing Administrations ... 342
Reformulated Gasoline ... 300
Technological Advancements ... 320
Strategic Petroleum Reserves ... 327, 338
  Average Cost of SPR Oil ... 353
  Decommissioning Weeks Island Oil ... 344, 345, 346
  Drawdown Rate ... 354
  Environmental Security at Other SPR Sites ... 352
  Hot and Gassy Oil ... 353
  Oil Sale Authority ... 346
  Unobligated Balances ... 339, 340
Additional Committee Questions:
  Advanced Clean/Efficient Power Systems ... 383
  Advanced Computational Technology Initiative ... 396
  Advanced Research and Environmental Technology ... 381, 385
  Advanced Turbine Systems ... 400
  B&W Air Toxic Facility ... 381
  Bioprocessing of Coal ... 389
  Clean Coal Technology:
    Overview of Budget Request ... 358
    Potential Excess Funds ... 376
    Project Level Information ... 361
  Climate Change Action Plan ... 395
  Coal Preparation ... 378
  Coal Technology Export ... 388
  Cooperative Research and Development ... 421
  Delivery and Storage ... 398
  Direct Liquefaction ... 379
  Environmental Activities ... 387
  Environmental Research/Regulatory Impact Analysis ... 401
  Environmental Restoration ... 431
  Fuel Cells:
    Historical and Outyear Costs ... 406

Page

Additional Committee Questions—Continued
  Fuel Cells—Continued
    Molten Carbonate 403
    Phosphoric Acid 403
    Planar Solid Oxide 406
    Tubular Solid Oxide 404
  High Efficiency/Integrated Gasification Combined Cycle 384
  High Efficiency/Pressurized Fluidized Bed 385
  Impact on Budget Request on METC and PETC 452
  Indirect Liquefaction 380
  Natural Gas Research 391
  Naval Petroleum and Oil Shale Reserves:
    Contract for Elk Hills Operation 471
    Federal Staffing 475
    Oil Shale Reserves 472
    Operation of Elk Hills 467
    Overview of Budget Request 463
    Sale of Elk Hills 463
  Oil Technology 409
    Exploration and Production/Environmental Research 409, 417
    Processing Research and Downstream Operations 417
    Recovery Field Demonstrations/Classes 1 through 5 412
    Recovery Field Demonstrations/New Initiatives 414
    Rocky Mountain Oilfield Testing Center 416
  Overview of Budget Request 377
  Plant and Capital Equipment 421
  Program Direction 419
  Project Reductions, Eliminations, Increases, and New Starts 433
  Resource and Extraction 392
  Strategic Petroleum Reserve:
    Authorization 477
    Hot and Gassy Oil 481
    Life Extension 479
    Need for the Strategic Petroleum Reserve 483
    Overview of Budget Request 476
    Weeks Island 477
  Systems for Coproducts 382
  Use of Prior Year Balances 432
Questions Submitted by Chairman Ralph Regula:
  Advanced Emissions Control Development Program 502
  Clean Coal Technology 500
  Coal Research and Development 503
  Cogeneration 507
  General 486
  Naval Petroleum Reserves 491
  Oil and Gas 506
  Strategic Petroleum Reserve 488
Questions Submitted by Congressman Sidney Yates:
  Advanced Computational Technology Initiative 509
  Argonne National Laboratory 509
  Clean Air Act Regulatory Impacts 510
  Clean Coal Technology Program 514
  Cooperative Research and Development 513
  Fossil Energy Environmental Restoration 514

Page
Questions Submitted by Congressman Sidney Yates—Continued
  Headquarters Program Direction 511
  Mild Gasification Termination 508
  Naval Petroleum Reserve 516
  Strategic Petroleum Reserve Management Costs 517

Energy Conservation

Advanced Technology Program (ATP) 555
Alternative Fuel Vehicles 575
Authorization for Energy Efficiency Programs 578, 579
Biography of Robert Kripowicz 531
Buildings Consortia 550
Canadian Fuel-Cell Bus 544
Compact Fluorescent Light Bulbs 583
Continuous Fiber Ceramic Composites Program 565
Cool Communities Program 574
Downsizing at Department of Energy 566
Electric Vehicles 545
Energy Efficient Windows 539
Federal Energy Management Program 584
Federal Role in Research 554
Fuel Cells 544, 547, 551
FY 1995 Rescissions 563
FY 1996 Budget Request 532
Grant Programs Priorities 577
Housing and Urban Development Partnership 573
Institutional Conservation Program 577
Integrated Building and Construction Solutions 541, 568
Internal Combustion Engine 549
Inventions and Innovation Program 556
Lighting Collaboratives 582
Marketplace Response to Research 536
Natural Gas Vehicles 547
Opening Remarks 532
Partnership for a New Generation of Vehicles 536, 567
  Funding Ratios 568
  Potential Spill-Over Technologies 572
Power Marketing Administrations 562
Process Review Procedure on Research Efforts 558
Proprietary Rights 569
Retrofit of Low-Income Houses 571
Staffing Increase 544
State Grant Programs 582
Sulfur Lamp 552, 582
Technology Reinvestment Program (TRP) 556
Transportation Infrastructure 564
Transportation Technologies Spinoffs 572
U.S. Advanced Battery Consortium 546
Weatherization Assistance Program 563, 570, 575
Windows and Glazing Program 543
Zero Emission Vehicles 548
Additional Committee Questions:
  Buildings Sector:
    Best Practices 592

Page
Additional Committee Questions—Continued
  Buildings Sector—Continued
    Building System 587
    Building Envelope 594
    Building Equipment 596
    Codes and Standards 599
    Commercial Buildings 588
    Cool Communities 607
    Federal Energy Management Program 602
    Implementation and Deployment 607
    Management and Planning 611
    Residential Buildings 587
    Retrofit Technologies 590
    Training for Commercial Building Operators 610
  Climate Change 765, 767
  Development Appropriations 765
  Field Offices 772
  Industry Sector:
    Advanced Gas Turbines 613
    Climate Wise and Climate Challenge 657
    Cogeneration 612
    Continuous Fiber Ceramic Composites 618
    Golden Carrot 621
    Implementation and Deployment 655
      New Starts 659
    Industrial Waste:
      Municipal Solid Waste 633
      Waste Reduction 625
    Management & Planning 660
    Materials and Metals Processing:
      Metals Initiative 635
      Foundries and Glass 642
      Advanced Materials 644
    Motor Challenge 618
    Other Process Efficiency Alternative Feedstocks 645
    Overview of Budget Request 586
    Process Development 650
    Process Heating & Cooling 623
    Pulp and Paper 654
  Initiatives 780
  Joint Funding with Other Federal Entities 768
  National Laboratory Funding 776
  Policy and Management 763
  Technical and Financial Assistance:
    Institutional Conservation Program 760
    International Market Development 754
    Inventions and Innovation Program 757
    Municipal Energy Management 758
    State Energy Conservation Program 759
    Weatherization Assistance Program 758
  Transportation Sector:
    Alternatively Fueled Vehicle Data Acquisition 663
    Electric and Hybrid Propulsion 681
    Energy Policy Act 666

Page
Additional Committee Questions—Continued
  Transportation Sector—Continued
    Heat Engines 680
    Implementation and Deployment 686
    Materials Technology 672
    Partnership for a New Generation of Vehicles 673
    Systems Development 685
  Uncosted Balances 780
  Utility Sector 691
Questions Submitted by Chairman Ralph Regula:
  Buildings 801
  Climate Change Action Plan 798
  General 785
  Industry 812
  Practical Applications of Energy Conservation Technology 797
  Technical and Financial Assistance: International Market Development ... 845
  Transportation Sector:
    Alternative Fuel Vehicle Purchases 837
    Battery Technology 836
    Fuel Cell Locomotive 843
    Partnership for a New Generation of Vehicles 823
    West Virginia University/Hercules R&D Program 841
Questions Submitted by Congressman David E. Skaggs: Federal Energy Management Program Savings 847

○

BOSTON PUBLIC LIBRARY
3 9999 05571 146 7

ISBN 0-16-047205-9
90000
9 780160 472053